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"Green" Initiatives in the Civilian Lodging Industry Adapted for Use by U.S. Air Force Lodging Operations

A Professional Paper Presented to the
Faculty of the Conrad N. Hilton College of
Hotel and Restaurant Management
University of Houston

In Partial Fulfillment
of the Requirements for the Degree

Master of Hospitality Management

Kathleen E. Weatherspoon

August 1995

"Green" Initiatives in the Civilian Lodging Industry Adapted for Use by U.S. Air Force Lodging Operations

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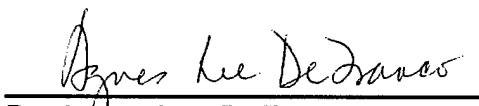
Approved by



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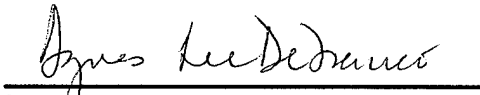

Dr. Agnes Lee DeFranco
Chair, Graduate Studies Committee

August 1995

Dedication

This professional paper is dedicated to my parents, Jarrett M., Jr. and Elizabeth Weatherspoon, for their love, guidance, and support in every endeavor I have undertaken. Words can never adequately express the extent of my appreciation for their numerous selfless acts nor the depth of my love for them. They taught me many things over the years, and I continue to learn from them every day. The list is endless, but their encouragement and belief in me have given me the strength to accept challenges and the integrity to demand the best from myself regardless of the circumstances.

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Micki Wilcox, technical analyst for the EPA's Green Lights program

The Buy Recycled Business Alliance

The EPA WasteWi$e program

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"Green" Initiatives in the Civilian Lodging Industry Adapted for Use by U.S. Air Force Lodging Operations. August 1995. Kathleen E. Weatherspoon, B.A., Adrian College. Graduate Advisor: Dr. Agnes Lee DeFranco

Abstract

The hospitality industry has never been considered a major proponent of environmental consciousness. For the lodging industry, the very nature of the services provided produce vast amounts of solid waste while using astronomical resources during day to day operations. However, an increasing awareness about the importance of environmental conservation has occurred on a global scale. Factors including increased legislation and changing consumer attitudes have prompted many in the lodging industry to pursue "environmentally friendly" practices. This study reviewed the literature concerning society's increasing environmental awareness, the concept of sustainable development, and the greening of the United States Air Force and the lodging industry. Recognized lodging green leaders were also personally contacted to gather pertinent information.

Air Force lodging operations are patterned after lodging industry standards. With the increasing emphasis on the environment across American society, including emphasis within the Air Force, it was determined a study of civilian lodging green initiatives could benefit Air Force lodging operations. The study focused specifically on the areas of energy conservation, solid waste minimization, and water conservation. From the information gathered, utilizing the knowledge and experiences of successful green lodging initiatives, the GO GREEN program was developed. GO GREEN is a set of guiding principles developed to ensure successful development, implementation and maintenance of new green initiatives or expansion of existing green programs. To accompany GO GREEN, a series of checklists adapting civilian lodging initiatives for use by Air Force lodging operations was created. These checklists function as a basic environmental audit to assess the environmental friendliness of Air Force lodging operations.

Style guide used: Publication Manual of the American Psychological Association (4th ed.). (1994).

Introduction

The environment is one of the few issues that touch all aspects of our lives and all segments of our society.
Tedd Saunders, The Bottom Line of Green Is Black

Love Canal. Three Mile Island. Bhopal. Chernobyl. Exxon Valdez. Persian Gulf War oil fires. The massive media coverage of such disasters coupled with increased consumer education brought terms like acid rain, global warming, and ozone depletion into virtually every household. Each incident caused extensive damage to the planet and its inhabitants. In the wake of each disaster, public outcry against such blatant disregard for the world grew louder and more widespread. As a result, major political platforms have been built on environmental issues; environmental legislation at all levels has been passed; and membership in conservation societies has grown exponentially. Additionally, many individuals have become proactive in their private lives in efforts to save the earth. Many are demanding that businesses, including lodging operations, become more environmentally consciencious in their operations.

Historically, the hospitality industry has not been a leading proponent of environmental stewardship. For example, the American lodging industry, with over 40,000 hotels and motels nationwide, produces vast amounts of waste and ". . . is an incredible user of resources" (Wolff, 1994, p. 66). "Greening an industry of this magnitude represents potentially huge savings in energy and natural resources" (Cooper, 1994, p. 8). Many hoteliers have recognized this potential but have been

influenced by other factors as well. One factor, increased environmental legislation at all levels of government, has prompted hoteliers to become more proactive in their conservation attempts. "Sources agree that if the lodging industry doesn't clean up its own act, regulators will" (Jesitus, 1992a, p. 134). Customers constitute a second important factor in changing lodging procedures concerning resource use and conservation. Recent studies (Rockland, 1993; Shanklin, 1993; "Survey Reveals Concerns," 1993) indicated increasing numbers of consumers concerned with protecting the environment. Other studies ("The Hotel of the Future?" 1994; E. Watkins, 1994) showed strong consumer beliefs that lodging facility operators have a moral obligation to improve environmental policy and conserve resources. These studies reinforce an earlier World Travel Organization survey ("Environmental Concern," 1992) that found public and tourist concern about the environment is not a passing fad. The 43 million self-proclaimed American "eco-tourists" give properties that institute "environmentally friendly" practices an advantage over rival properties in gaining access to a growing market segment (Iwanowski & Rushmore, 1994, p. 35). Environmentally friendly operations can reap a variety of benefits as many managers can attest. The advantages to be gained plus probable future restrictive legislation should entice every lodging facility, including United States Air Force (USAF) lodging operations, to "jump on the environmental bandwagon."

This study explored some of the factors responsible for society's raised environmental consciousness, the concept of sustainable development, and the "greening" of the USAF and the lodging industry. Definitions vary as to what

constitutes a "green" hotel. To some, green means rooms equipped with air and water filtration devices, while to others, green encompasses any measure designed to reduce pollution. The span of pollution prevention areas is so broad, every area could not be addressed. Instead, this study focused on identifying the pollution prevention measures, specifically in energy conservation, solid waste minimization, and water conservation most often used in the lodging industry. The sheer number of green lodging programs precluded study of them all. Rather, a cross-section of examples touted in the recent literature as the industry green leaders formed the foundation for this analysis. The green movement in the Air Force (AF) coupled with the historic parallel between AF lodging operations and their civilian equivalent, the lodging industry, suggested that lodging industry conservation methods be investigated and adapted for possible use by AF lodging operations.

The extensive literature review and personal communication with top green lodging industry leaders presented strong evidence that the green movement will continue. Based on the information obtained, GO GREEN, a set of guiding principles, and checklists targeting AF lodging operations were developed and recommended for adoption by the Air Force Services Agency. The GO GREEN guidelines are applicable to any organization. These non-technical checklists for energy conservation, solid waste management, and water conservation serve as a basic environmental audit for AF lodging managers to assess their operation. The checklists document ideas and initiatives that have been undertaken and proven successful in some of the most widely recognized green lodging programs.

Review of Literature

A Green Revolution

Rarely has a movement in so short a time gained such popular support, had such legislative and regulatory impact, produced so many active organizations, or become so embedded in a culture: a green revolution indeed.
Kirkpatrick Sale, The Green Revolution

Some have suggested that the environmental movement in America has its roots as far back as the Industrial Revolution (circa 1800s) although there is little validation in the literature for this theory (Vincoli, 1993, p. 3). At that point in time, the primary concern was air pollution, and the responsibility for control rested with states and cities where air pollution was deemed a problem. "There is no real documented evidence that positively identifies an exact point in our nation's history where the level of environmental awareness of the population reached a point that demanded governmental intervention" (Vincoli, 1993, p. 3). However, it is known that the enactment of the Rivers and Harbors Act of 1899 was the first federal law to address an environmental issue. Although the Rivers and Harbors Act specifically addressed disposal of solid objects into waterways that could create navigation hazards, the Act is still considered the first attempt to regulate solid waste. Actual pollution of waterways was of little concern in early twentieth century industrial America since belief in an unlimited fresh water supply prevailed.

During the first three decades of the 1900s, world events like World War I, Prohibition, and the Great Depression caused national and governmental focus on

issues other than pollution control. However, by the 1950s, the United States (U.S.) population had more than doubled, increasing city sizes and reducing distances between major population areas. As the population explosion continued, people slowly became aware of the need for safe disposal of industrial and domestic waste. Enactment of the Atomic Energy Act of 1954 ". . . drew attention to the issue of unregulated waste disposal and its potential effects on humans and the environment . . . [and therefore] . . . is considered a significant milestone in the history of U.S. environmental policy development" (Vincoli, 1993, p. 6).

The focus returned to air pollution during World War II when a new air pollutant, photochemical smog, was discovered over Los Angeles, California. In 1955, the enactment of the Air Pollution Control Act was the first attempt by the U.S. to address the air pollution problem on a national level. It was, however, a shortsighted effort since it only targeted a reduction in emissions rather than a reduction of the contaminants in the emissions. This Act was the predecessor of the Clean Air Act of 1967 which finally focused on the actual cause and effects of air pollution from contaminated emissions.

In addition to federal regulations dealing with environmental issues, popular literature and conservation societies also served to center attention on the environment. In the 1940s, two prominent environmentalist champions, Fairborn Osborn and William Vogt, wrote two national bestsellers, Our Plundered Planet and Road to Survival, respectively. More and more conservation societies sprouted up and by 1960 membership in major organizations numbered more than 300,000.

The publication of Silent Spring by Rachel Carson in 1962 is most often credited for the beginning of the modern environmental movement. Silent Spring was a detailed and powerful condemnation of the American pesticide industry and in particular, the threat of DDT, a dangerous chemical. This book galvanized both conservation groups and people who had never before given a thought to the natural world into a concerted movement that quickly became known as environmentalism (Sale, 1993, p. 7).

The environmentalism surge continued both in government circles and the general population. President Nixon signed into law the National Environmental Policy Act (NEPA) on January 1, 1970, and by Executive Order that same year created the U.S. Environmental Protection Agency (EPA). An escalation of legislative activity in environmental protection areas over the next decade occurred. "Between 1970 and 1980, Congress passed no fewer than eighteen far-ranging and complex environmental acts, no small feat for a branch of government noted for its snail-paced responses to even the most urgent matters" (Sale, 1993, p. 36). This legislation included the Clean Air Act of 1970, the Resource Conservation and Recovery Act of 1976, and the Clean Water Act of 1977. These Acts were significant because ". . . they were drawn up with little concern for the cost of implementing them" (Cairncross, 1992, p. 2). Another notable event was the celebration of Earth Day on April 22, 1970. The mass participation (estimated at 20 million people by Time magazine) in events across America portrayed the true extent of environmental concern among the general population (Sale, 1993, p. 24).

Political influence in the world of environmentalism continued with the presidential election of Jimmy Carter in 1976. Carter, a self-styled environmentalist, was helped into office by green activists and his election helped legitimize the movement and cement a permanent government role in environmental issues (Harrison, 1993, p. 8). In the 1980s, Congress continued its strong push in the environmental arena with updated amendments to the major acts previously passed as well as passage of additional environmental legislation. In the 1988 Presidential campaign, then Vice President Bush wished to be referred to as the Environmental Candidate. In 1992, all the Presidential candidates had carefully constructed environmental position platforms. The environment had reached such national and, therefore, political importance due to the ever increasing public awareness about the environment and environmental health issues that candidates had to address the subject.

Public awareness was fueled by far-reaching effects of environmental disasters, increasing growth of environmental conservation societies, and global recognition and publicity of environmental matters. Bhopal, Love Canal, Chernobyl and the Exxon Valdez are only a few of the incidents that have rocked the entire world with the damage done to the earth and its inhabitants. These incidents, no doubt, caused even more growth in environmental societies. Kirkpatrick Sale, author of The Green Revolution, commented that the number and variety of organizations just keep growing:

> *In addition to the quite uncountable number of local and regional groups--as many as 12,000, according to one 1990 estimate--there were at least 325 organizations of national standing, according to the 1991 Encyclopedia of Associations; of those, the most active and important, as listed in two environmental directories that came out in 1991, numbered between 100 and 150. Calculating from the 1991 Resource Guide to Environmental Organizations, total membership in the larger national organizations could be estimated at around 20 million, with perhaps a 30 percent overlap, or more than 14 million individuals in all, about one in every seven adults in the land.* (pp. 77-79)

In 1992, the Earth Summit in Rio de Janeiro was the largest gathering of heads of state designed specifically "to talk global greening, sign agreements, and begin to set up the bureaucratic machinery for putting it into practice" (Harrison, 1993, p. 10). As the environmental movement continued to flourish in the 1990s, it was dubbed the "decade of green." But environmentalism is expected to continue well beyond the 1990s. It is no longer a fad; rather the modern movement in the thirty plus years since Silent Spring was published, ". . . has become an essential and indelible factor in everything from political campaigns to legislative agendas, building codes to product marketing, school curriculums to university research; in short, a permanent part of American life [which] ". . . affects habits, vacations, clothing, food, travel, even friendships" (Harrison, 1993, pp. 7-8, 96). Business has also been affected by society's increased environmental consciousness.

Greening + Economic Growth = Sustainable Development

Business excellence and environmental concern . . . cannot be separated . . . Tomorrow's winners will be those who make the most and fastest progress in improving their eco-efficiency.

Stephan Schmidheiny,
Chair, Business Council
for Sustainable Development

Environmental protection and economic growth have long been viewed as impossible to achieve together. In the early 1970s when the modern environmental movement reached a peak, some environmentalists argued fiercely that economic growth and wise environmental policies were incompatible (Cairncross, 1992, p. 12). As Congress passed environmental legislation without regard to implementation costs, tension between businesses and environmentalists grew. "This conflict traditionally pits the interest of corporate profit against the protection of natural resources" (Saunders & McGovern, 1993, p. xi). Businesses argued that regulatory compliance costs money and reduces profit. Environmentalists countered that company compliance costs are minor compared to the long term costs of neglecting natural resources. During this period, roughly 1970 to 1985, ". . . companies did little more than comply with the regulations and often fought or stymied them" (Walley & Whitehead, 1994, p. 48). In the past two decades, progress toward more common ground occurred as the environmental movement matured and the context of regulations shifted to focus more on the ultimate environmental results rather than simply focusing on the mechanics of compliance.

After much debate, the World Conservation Strategy in 1980 termed the common ground between environmental protection and economic growth "sustainable development." The concept of sustainable development was further developed in the 1987 Brundtland report, Our Common Future, written by an international commission on environment and development. Mrs. Brundtland, then the Prime Minister of Norway, defined the idea as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Cairncross, 1992, p. 26). Sustainable development has been embraced by many businesses as awareness of corporate social responsibility has grown. "Whether this new awareness is brought about by government pressures, rising social and educational standards of the general public, or the enlightened self-interest of business itself is not important" (Linowes, 1974, p. ix). What is important is that businesses are now ". . . expected to help society fulfill its goals" (Linowes, 1974, p. ix).

> *None of this happened by accident. A tidal wave of citizen action militated to produce it. Perhaps the most notable was the forming of innumerable dissident groups, structured into onslaught vehicles of unrelenting social change. Whole directories now exist listing action and research groups concerned solely with protecting and preserving the ecology.* (Linowes, 1974, p. 15)

Consumer opinions are forcing businesses to act more responsibly. "An April 1993 Times Mirror-Roper poll shows that over two-thirds of Americans do not believe the country must choose between environmental protection and economic development" (Walley & Whitehead, 1994, p. 48). "Businesses, large and small,

[including the USAF and the lodging industry] have joined the ranks of the environmentally concerned and are making an effort to protect the earth" (Anderson, 1992, p. 14).

A leaner, greener USAF.

Protecting the environment goes hand-in-hand with accomplishing the mission, supporting our people, maintaining our readiness, and lowering the cost of doing business.

Thomas W. L. McCall, Jr.
AF deputy assistant secretary
for Environment, Safety, and
Occupational Health

"Tough new environmental laws have driven the Air Force to change the way it does business, switching to more environmentally friendly methods for everything from film processing to fuel storage" (Evers, 1994, p. 77). The draw down in funds and personnel over the last few years has also impacted the AF attitude toward environmental issues. Despite decreased funding and fewer personnel to devote to environmental issues, the AF continues to be committed to environmental stewardship. According to Sheila Widnall, the Secretary of the Air Force, "The Air Force is dedicated to the protection of our natural and cultural resources. It is the right thing to do, and the American people should expect no less from us" (Widnall, 1994, p. 38).

Although the AF has been voluntarily involved with environmental concerns for many years, recent legislation has increased the pressure to comply with federal, state, and local laws. As well as concentrating on the clean-up of

environmental hazards on existing and closure bases, the focus has increasingly turned toward pollution prevention. In January 1993, an internally developed Pollution Prevention Program Action Plan was distributed to all commanders from then USAF Chief of Staff, General Merrill McPeak and Donald Rice, then Secretary of the Air Force. The plan specifically called for reducing municipal solid waste 30 percent by 1996 and 50 percent by 1997 from a 1992 baseline. In addition, in August 1993 the Department of Defense (DoD) issued a recycling policy that required every DoD installation worldwide to have a recycling program (Riggle, 1993, p. 30). Air Force policy now dictates that fines for violating the Federal Facilities Compliance Act, "which allows citizens to sue the federal government for lack of compliance with local, state, and federal environmental standards," (Evers, 1994, p. 77) will come out of the base wing commander's operating budget--a powerful incentive for base compliance. Lieutenant Colonel Forbes, the AF acquisition and pollution prevention program chief, hopes the policy will help managers ". . . really focus in on pollution prevention [and to make pollution prevention] . . . an intimate part of their day-to-day system engineering activities" (Evers, 1994, p. 77).

Great inroads have been made on the macro-level in base-wide recycling programs, composting programs, and land and wildlife management activities. The AF has undertaken other innovative environmental projects for special situations. The following examples illustrate the AF commitment to preserving the earth and its inhabitants, and in many cases, saving funds:

- Whiteman Air Force Base (AFB), Missouri, over the past three years ". . . has reduced its solid waste by 55 percent, earned over $150,000, and recycled 4,610,880 pounds of material" (Pro-Act, 1994, p. 1). An innovative part of the recycling program involves Christmas tree re-use. Christmas trees are collected on base and then delivered to the Missouri Department of Conservation (MDC). The MDC uses the trees for fish and wildlife habitats. "Not only does this project eliminate a waste stream, it also enhances wildlife habitats and helps to provide better recreation facilities for Whiteman AFB personnel" (Pro-Act, 1994, p. 2).

- The Air Force Academy, Colorado, began a composting program in December 1992. Since the program inception more than 10,000 cubic yards of waste material has been processed which "translates into $20,000 per year in product savings from decreased fertilizer/topsoil purchases and approximately $100,000 per year in disposal fee cost avoidance. Through composting alone, the Academy realized an 8 percent reduction in solid waste in 1993" (Pro-Act, 1995, p. 4).

- Seymour Johnson AFB, North Carolina, "processed over 1.5 million pounds of yard waste in 1993, resulting in savings of more than $62,000 in landfill fees, $3,800 in fertilizer purchases and $10,600 in topsoil purchases" (Pro-Act, 1995, p. 5). The number of recycled products used on base increased from 20 in 1993 to 100 in 1994. It also "started the first Air Force bioremediation process to clean soil contaminated with petroleum products. The process saved taxpayers $133,000 during its first year of operation" (Chapman, 1995b, p. 16).

- The AF protects more than 100,000 acres of wetlands, a wide variety of plants and animals at live-fire ranges, and more than 70 different rare plant and animal species (Widnall, 1994, p. 38).

- Targets were re-positioned to avoid disturbing the red-cockaded woodpecker at four ranges in the southeast; the desert tortoise habitat was fenced off at Nevada's Nellis range to prevent unauthorized intrusion; Alaskan flying routes and altitudes were modified to avoid peregrine falcon nests; and lighting at Cape Canaveral, Florida, was adjusted to protect nesting sea turtles and their newly hatched young (Widnall, 1994, p. 38).

- Vandenberg AFB, California, manages populations of coyotes and the California least tern, an endangered species (Widnall, 1994, p. 38).

- Tinker AFB, Oklahoma, instituted process changes and material substitutions that reduced hazardous chemicals from the installation's waste stream by 25 percent (Widnall, 1994, p. 38).

- Recent policy curtailed the inclusion of official photographs in officers' promotion folders. All 75,000 8-by-10 inch glossy photos, 2,000 pounds of material, were removed and shipped for chemical processing to extract their silver content. "The Air Force was paid $1,700 for the recovered silver" (Jordan, 1995, p. 10).

- Warner Robins Air Logistics Center, Georgia, instituted new less environmentally damaging methods to strip paint from C-130 Hercules aircraft, recycled more than 750,000 pounds of hazardous sludge, converted base vehicles to run on natural gas, and continued clean-up of hazardous waste sites on base (S. Watkins, 1995, p. 24).

- Kelly AFB, Texas, reduced the use of ozone-depleting substances by more than 70,000 pounds. Switching to water-based cleaners virtually eliminated the use of solvents like freon 113 and trichloroethane. The base's Corrosion Control Facility cut water use by aircraft by 100,000 gallons, for a total of 3 million gallons per year. New vapor degreasers and aircraft parts washers cut the base's water use by an additional 5 million gallons per year (Chapman, 1995a, p. 16).

However, day-to-day system operations must include conservation activities on a micro-level in individual activities such as AF lodging.

The greening of the lodging industry.

Clean and green engenders growth, profit and lasting competition.
Tom Peters, In Search of Excellence

The greening of the lodging industry can be traced to several contributing factors. Like other businesses, lodging establishments have been affected by environmental laws. Many consumers have extended their expectations of environmental stewardship responsibilities to the lodging industry; but perhaps the most driving force is the never ending competition for market share and profitability.

The lodging industry has yet to be as heavily regulated with environmental laws as the heavy industry sector. Many managers have realized, however, that

more stringent regulations will emerge if the industry does not take a proactive role in regulating itself. To this end, many companies have taken it upon themselves to develop and institute more environmentally friendly practices. Greener operations began with the introduction of non-smoking rooms. The popularity of non-smoking rooms has grown exponentially and they are now available at nearly every lodging establishment. The next step in the evolution of green rooms, one step above designated non-smoking rooms, was rooms outfitted with air and water filters. Billed as "clean" or green rooms by lodging companies, these rooms are targeted at guests who suffer from hayfever or any airborne related allergy like smoke or dust. Rob Joyce, president of Green Suites, one company that provides the equipment for these types of rooms, claims ". . . there are 50 million Americans with respiratory ailments. In addition, some surveys claim there are 80 million 'green travellers' eager to rent 'clean' rooms" (Wolff, 1994, p. 65). These rooms are an effort to fulfill customer needs as well as increase market share, thereby increasing the bottom line.

There has been an increase in state legislation, especially concerning solid waste. Many state regulations require a reduction of solid waste by all landfill users, and some have specifically targeted the lodging industry. For example, Texas state law ". . . mandates that cities try to divert 40 percent of their waste by 2000 through recycling, waste-reduction and other efforts" (Dawson, 1994, p. 23) and in 1988 Florida passed a law requiring ". . . resorts to reduce their waste streams by one-third by the end of 1994" (Hayward, 1994, p. 48). Most waste

reduction programs occur behind the scenes in administrative and housekeeping areas and are rarely seen by customers. But some companies have taken their environmental initiatives right into the guest rooms with tremendously positive results. Canadian Pacific Hotels & Resorts provides a recycling bin in each guest room and asks guests to participate in the program. The Saunders Hotel Group installed refillable wall dispensers for amenities rather than continuing to use throw-away individual miniature bottles. According to the American Hotel & Motel Association (AH&MA), ". . . on any given night there are about two million people staying in one of the nation's 44,800 hotels and motels [providing] . . . two million opportunities to communicate environmental messages" (Makower, 1994a, p. 43). A recent study by the Department of Hospitality and Tourism and Management at Virginia Polytechnic University sponsored by Lodging Hospitality magazine showed that 70.8 percent of the frequent travellers surveyed would be likely or extremely likely to stay in a hotel implementing environmental strategies. In addition, 54.3 percent considered themselves environmentally-minded travelers (E. Watkins, 1994, p. 70). These and other similar statistics indicating widespread consumer environmental concern corresponds to environmental responsibility, or greenness, becoming the latest lodging marketing strategy used to attract consumers, increase market share, and increase profitability. "There is no doubt that 'green' sells" (Wight, 1993, p. 4). The Boston Park Plaza Hotel, a Saunders' Hotel Group property, increased group business in 1992 by more than $750,000 because of its highly publicized and recognized environmental efforts (McDowell, 1992, p. 37).

Scott Anderson, former president of Callaway Gardens Resort in Pine Mountain Georgia says, "It's not a small marketing point. The 'green market' is growing by 15 percent a year, and research shows that, where two products are comparable, this segment will pay 10 percent more for the 'green' product" (Bruns, 1993, p. 84).

Other lodging companies have also added a variety of environmental initiatives such as implementing guest discretionary programs to re-use towels and bed linen, installing water-saving showerheads, faucets and toilets; installing energy-efficient compact fluorescent lighting, and implementing recycling programs--all without reducing levels of service. The above mentioned initiatives illustrate the three environmental areas most frequently addressed by the lodging industry in the attempt to increase profitability with environmentally sound practices: energy conservation, solid waste minimization, and water conservation. A multitude of resources, both for a fee and free, is available to lodging facilities wishing to develop and institute or expand existing environmental programs. (Appendix A describes pertinent associations, information sources, and consulting services).

Energy Consumption

Energy use is one of the worst problems facing the world.
The Economist

United States energy consumption is not directly related to population density as one might think. Shanklin (1993) reports the U.S. has only approximately 5 percent of the world population yet it consumes slightly more than one-fourth of the

world's annual oil, natural gas, and coal production (p. 222). Wheatley (1993) reports that the U.S. has 6 percent of the world population but consumes 30 percent of its energy. To provide perspective, by contrast, India with 20 percent of the world population consumes only 2 percent of its energy (p. 86). One of the biggest energy users is lighting. "Lighting accounts for 20-25 percent of electricity used annually in the United States. Lighting for industry, businesses, offices and warehouses represents 80-90 percent of total lighting electricity use" (Denton, 1994, p. 222). The Electric Power Research Institute estimates that if high efficiency lighting was used nationwide to its full potential, ". . . the electricity required for lighting would be cut by 50 percent, and aggregate national electricity demand would be reduced by 10 percent" (Anderson, 1992, p. 16).

Americans have undergone several periods where energy conservation reached critical importance. The 1973 oil embargo had a dramatic effect on energy views (Claridge, Haberl, Turner, & O'Neal, 1994, p. 64). Energy conservation became the buzz word for the time and efforts to improve energy efficiency and reduce use were paramount. However, as oil prices stabilized and began to drop, the emphasis on energy conservation faded. Interest revived in 1990 during the Persian Gulf War when visions of Iraq controlling or destroying Saudi Arabian oil fields brought the realization that disrupted oil supplies would once again increase prices. With the allied victory, the energy markets settled and the energy conservation furor faded (Dale & Kluga, 1992, p. 30). But as the current Clinton administration believes in energy conservation and ". . . is on record as favoring

policies that will cut U.S. energy consumption by 20 percent by 2000, ("Cutting Energy Consumption," 1993, p. 6) it is a safe assumption that energy issues will once again command increased attention.

Energy conservation in the lodging industry.

To conserve energy is to save money, ensure the ability to deliver guest services, and contribute to the community and environment.
J. C. Dale, chairman & Theodore Kluga, vice-president
Jack Dale Associates consulting and engineering firm

Although energy conservation-mindedness has faded somewhat, people do still think about it. In fact, it has spilled over in customers' attitudes toward lodging practices. A recent study sponsored by Lodging Hospitality magazine and conducted by Virginia Polytechnic University found 91 percent of those surveyed believed hotels should use energy-efficient lighting where possible. Eighty-seven percent believed lights should be turned off when guests were not in their rooms. Also, over 50 percent of those surveyed believed that hotels should keep corridors warmer than guest rooms in the summer and cooler than guest rooms in the winter (E. Watkins, 1994, pp. 70-73).

Currently there is no specific energy legislation in effect for the lodging industry but "industry veterans like Tedd Saunders and Bill Browning, director of green development, Rocky Mountain Institute, Snowy Mass, Colorado, predict that Capitol Hill will be holding hotels responsible for their recyclables and energy expenditures by law in no more than five years" (Glanzrock, 1995, p. 33). Since the

supply of energy directly impacts the lodging industry and its bottom line, conservation continues to be an issue worthy of consideration. Dale and Kluga (1992) estimate that the cost of energy is between 2 and 6 percent of a property's total operating budget (p. 31) while Haupric and Kluga (1994) set energy cost estimates at between 4 and 5 percent of the property's total operating costs (p. 147). Regardless of what percentage energy costs constitute in a property's total operating costs, the most profitable properties spend less on energy.

Hoteliers light up the bottom line.

Big energy-saving schemes fail if you try to do too much at once. It's better to do it bit by bit.

Andrew Patch, Chief Engineer
Hotel Inter-Continental New York

Aware of predictions of continued increases in energy costs and potential savings, astute hoteliers have begun to implement ways to conserve energy. Energy conservation is the right thing to do to help preserve the earth as well as the right thing to do for a more profitable business. Lighting retrofits to replace incandescent bulbs with compact fluorescent bulbs have been one of the most widely used energy-saving techniques. But a myriad of initiatives have been undertaken with significant savings realized:

- The Stouffer Renaissance Cottonwood Resort, Scottsdale, Arizona, in ten months reduced its utility costs by $46,000 through installing energy-efficient lighting, installing window shades in the accounting offices, reducing water heater temperature and pool temperature, and using seasonal thermostat settings (AH & MA award submission, 1994, p. 1-3).

- The Willard Inter-Continental, Washington, DC, in 1994 replaced more than 7,000 incandescent light bulbs with fluorescent bulbs 85 percent more energy efficient for savings of $49,000 a year (AH & MA award submission, 1994, p. 2).

- The Westin St. Francis Hotel, San Francisco, California, estimated savings of $85,000 in lighting costs by retrofitting with energy-efficient bulbs (Middleton & Hawkins, 1993, p. 68).

- The Westin Bayshore, Vancouver, British Columbia, installed high-tech fluorescent lights in 75 of its 517 rooms and lighting use was reduced by 440,000 kilowatt hours (Glanzrock, 1995, p. 33) and resulted in savings of $17,000 (Alexander, 1994, p. T-14).

- The Boston Park Plaza, Boston, Massachusetts, installed energy-efficient thermopane windows in its 977 rooms which saved 29,000 gallons of fuel oil and $126,450 (Alexander, 1994, p. T-14). The Plaza also installed energy-efficient lighting in the corridors and service areas that saved 25,000 watts per hour over the old lighting system (Makower, 1994b, p. L-13).

- The Ritz Carlton Hotel, Laguna Niguel, California, reduced its gas cost $45,000 a year by installing three high-efficiency, gas-fired boilers to replace four conventional units (Dale & Kluga, 1992, p. 32).

- The Westin Hotel, Cincinnati, Ohio, reduced its energy use 10 percent through a computerized property management system. They also took advantage of off-peak rates, doing laundry at night rather than during the day, and saved between $8,000 and $10,000 a month (Rowe, 1991, p. 54).

- The Kingfisher Bay Resort and Village's, Fraser Island, Australia, use of natural convection currents instead of air conditioning for cooling saves an estimated 500,000 kilowatts of energy each year (International Hotel Association [IHA], 1994, p. 59).

- Harmony Resort, St. John, U. S. Virgin Islands, runs solely on solar and wind power, completely independent of the island's power lines, resulting in zero electricity bills (Dempsey, 1993, p. 27).

- The Sheraton Rancho Cordova, Ranch Cordova, California, instituted an optional towel and sheet re-use program that approximately 20 to 25 percent of the guests participate in and lowered the property utility costs by 5 percent (Auer, 1994, p. 66).

Solid Waste Generation

This current shortsighted approach aimed only at convenience and immediate profit sacrifices any future potential for sustainability or efficient use of our limited resources.
Tedd Saunders, The Bottom Line of Green is Black

Municipal solid waste (MSW) has been defined by the EPA as "waste such as durable goods, containers and packaging, food scraps, yard trimmings, and miscellaneous inorganic waste from residential, commercial, institutional and industrial sources" (Shanklin, 1993, p. 221). The amount of MSW generated in the U.S. has risen steadily over the years and in 1990 it averaged 4.3 pounds per person. This represents the essence of a throwaway society. The desire for convenience has often resulted in the production of disposable products that end up in the garbage after a short life span. Figure 1 (Keep America Beautiful, Inc., 1992) illustrates how much waste ends up in landfills.

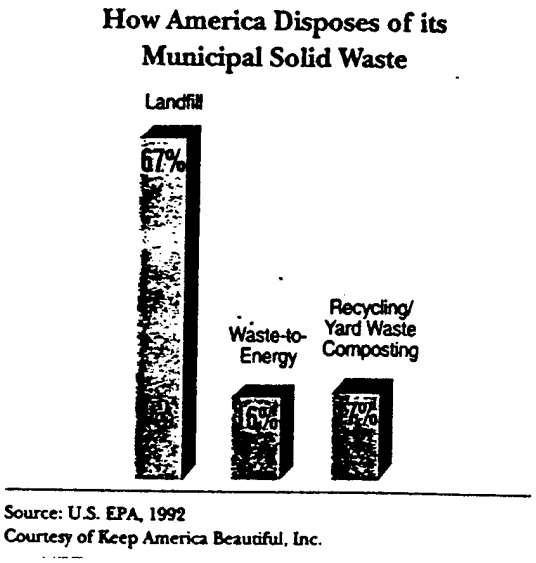
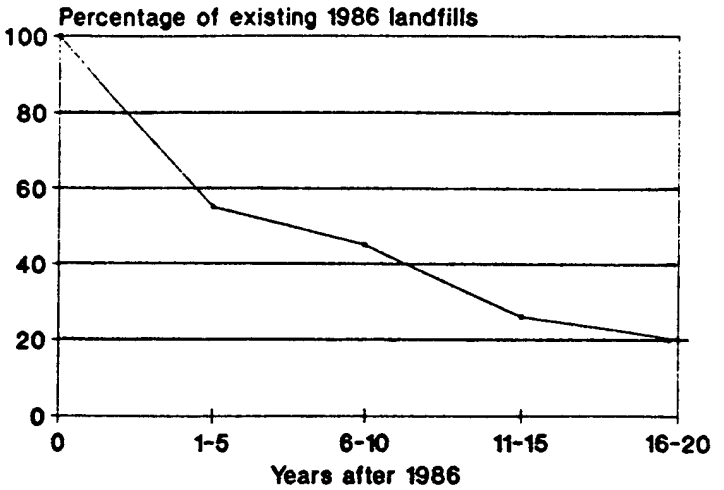


Fig. 1 -- How America disposes of its municipal solid waste

However, attitudes about MSW have begun to change because of increased legislation, the rising tipping costs (fees to dump garbage in landfills), reduced landfill areas available and consumer "Not In My Backyard" (NIMBY) attitudes toward opening new landfills. Diminishing landfill capacity as shown by Figure 2 (Office of Technology Assessment, 1989, p. 4) was of critical importance in the change in attitudes toward MSW.



NOTE: Based on estimate of 6,034 landfills; data for years 1-5 include an estimated 535 closings in 1986-87.

SOURCE: U.S. Environmental Protection Agency, *Report to Congress, Solid Waste Disposal in the United States, Volume II*, Office of Solid Waste and Emergency Response, EPA/530-SW-88-011B (Washington, DC: October 1988).

Fig. 2 -- Diminishing landfill capacity

Partially responsible for the diminishing landfill crisis is the length of time materials take to break down as Table 1 (Texas Parks and Wildlife Department) shows. "High standards for insulating landfills, designed to keep methane gas and nasty smells under control, make a nonsense of the word 'biodegradable.' Without air and moisture, trash simply will not rot" (Cairncross, 1992, pp. 227-228).

Table 1. Years for selected items to degrade

Waste Item	Years Required to Degrade
Cigarette butts	1-5
Aluminum cans and tabs	500
Glass bottles	1,000
Plastic bags	10-20
Plastic coated paper	5
Plastic film containers	20-30
Nylon fabric	30-40
Leather	up to 50
Wool socks	1-5
Orange and banana peels	up to 2
Tin cans	50
Plastic six-pack holders	100
Plastic bottles and Styrofoam	Indefinite

Since materials do not break down quickly and over two-thirds of the waste generated is landfilled, landfills quickly reach capacity.

John H. Gibbons aptly described the concerns facing American in the 1989 Congressional summary, Facing America's Trash: What Next for Municipal Solid Waste? written by the Office of Technology Assessment:

> *Increasing amounts of municipal solid waste, declining landfill capacity, public opposition to all types of management facilities, concerns about the risks associated with waste management, and rising costs are common problems facing communities across the Nation. As a result there is increasing awareness about the need to prevent municipal waste from being generated in the first place and to better manage what is generated. Many communities, States, businesses and public business groups are undertaking a variety of activities to address these needs. The challenge to improve the situation ranges from actions by individuals to supportive policies at the Federal level.* (p. iii)

Solid waste in the lodging industry.

More and more hoteliers are following the three Rs--reduce, reuse, recycle--and recasting their properties in environmentally friendly hues.
Marianne Tefft, Hotelier

Lodging facilities are like miniature cities producing incredible amounts of waste. In 1989, the National Solid Waste Management Association (NSWMA) estimated that first-class hotels generated 3.2 pounds of waste per room per day while mid-class hotels generated 1.7 pounds per room per day (Shanklin, 1993, p. 221). Another study done by International RecycleCo. at the Chicago, Illinois, Hyatt Regency found the waste generated was one pound per room and two pounds per suite on a non-checkout day. On checkout days, the waste generated was double these figures (Hasek, 1991, p. 56). Statistics like these caused many in the lodging industry to recognize MSW as an important concern. Many lodging companies have had solid waste disposal management systems in place for many years, mostly recycling programs, but the emphasis is now focused on solid waste minimization techniques.

Disposal management is defined as getting rid of waste that has already been generated with no regard for how much is generated. Solid waste minimization upgrades that process several levels by proactively reducing the amount of waste generated. This may include source reduction, product life extension, and rechanneling would-be waste to somewhere other than the landfill among other techniques (Cummings, 1992, p. 256). Solid waste minimization

strategies offered hoteliers a prime opportunity to increase profitability and polish the corporate image on environmental issues.

Hoteliers stop throwing profits out with the trash.

Hotels worldwide find creative ideas to reduce operating expenses by recycling and waste reduction.

IHA, Hotels

Although there is some money to be made by the sale of collected recyclable materials, the funds saved by reduced tipping fees are typically far greater. Hoteliers have instituted a variety of initiatives including recycling aluminum cans and old tablecloths, requiring suppliers to reduce packaging on items purchased, installing refillable dispensers for amenities to replace the individual miniature bottles, and donating used goods to charitable organizations. Huge savings have been realized through waste minimization techniques:

- The Hyatt Regency Chicago, Chicago, Illinois, recovers an average of 90,000 pounds of recyclable materials (paper, glass, aluminum, plastics, etc) each month resulting in annual sales revenue of $20,000 and saves approximately $60,000 in waste tipping fees. An added benefit is the $5,000 to $10,000 per month saved by the recovery of tableware, napkins and tablecloths (Hasek, 1991, p. 57).

- The Willard Inter-Continental, Washington, DC, replaced a 3 oz guest room bar soap with a 2.25 oz bar containing no animal fats or involving animal testing to reduce waste. All guest amenities, including the new soap, are packaged in recyclable materials. Undertaking these measures, the hotel expected savings of nearly $75,000 in 18 months (AH & MA award submission, 1994, p. 1).

- The Royal York, Toronto, Ontario, Canada, reduced waste 57 percent by donating used linens, soaps and shampoos to charitable organizations and organic waste to an area pig farm (Alexander, 1994, p. T-14) which slashed $198,000 off its annual waste disposal bill ("The Hotel of the Future?" 1994, p. 206).

- The Boston Park Plaza, Boston, Massachusetts, replaced individual soap bars, shampoo, mouthwash and hair conditioner containers with refillable dispensers saving nearly two million bottles from ending up in the landfill (American Hotel & Motel Association [AH & MA], 1994a, p.4) and $36,725 per year (Alexander, 1994, p. T-14). The recycling program that includes everything from steel cans to wooden shipping pallets eliminated 246 dumpster loads of waste per year (Porter, 1993, p. 17) and saved $41,280 in annual tipping fees (Siems, 1994, p. 8).

- The Twin Towers Hotel and Convention Center, Orlando, Florida, re-uses and recycles items, sells grease renderings to a soap manufacturer, and donates used guest room soap to homeless shelters for annualized savings of over $4,600 in reduced tipping fees (AH & MA, 1994b, p. 46).

- The Ramada Hotel at Oxon Hill, Oxon Hill, Maryland, recycles many items including cardboard, paper and glass reducing the monthly waste sent to the landfill by approximately 2.5 tons (from 6 tons to 3.5 tons) and saving approximately $1,000 monthly in tipping fees (AH & MA, 1994b, p. 56).

- The Westin Bayshore, Vancouver, British Columbia, Canada, instituted a recycling program in 1990 that has reduced landfill trips 75 percent, from four times a month to once per month. Installing refillable amenity dispensers has eliminated an estimated 180,000 containers from the landfill (Tefft, 1994, p. 25).

- The Hotel Inter-Continental New Orleans', New Orleans, Louisiana, solid waste program reduced the annual cost of waste removal from over $70,000 to $10,000--saving over $60,000 a year (Hasek, 1994, p. 89).

- The Trump Taj Mahal Casino Resort, Atlantic City, New Jersey, saved $487,373 in waste disposal costs in 1991, nearly one-half of the approximately $1 million spent in 1990 (Riggle, 1992, p. 37).

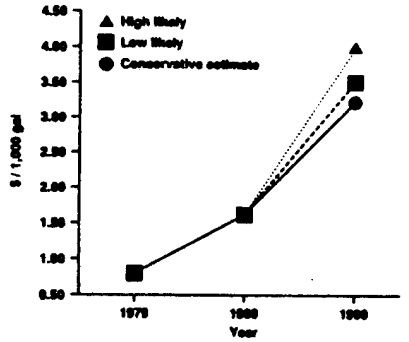
- The Opryland Hotel, Knoxville, Tennessee, began investigating recycling in 1989. In 1992, approximately 125 tons of cardboard worth $10,000, 24,000 pounds of aluminum cans worth $9,000 and 24,000 pounds of white paper worth $1,500 was collected. This eliminated nearly 150 tons from the landfill and earned the hotel over $20,000 (Jesitus, 1992a, p. 133).

Water Consumption

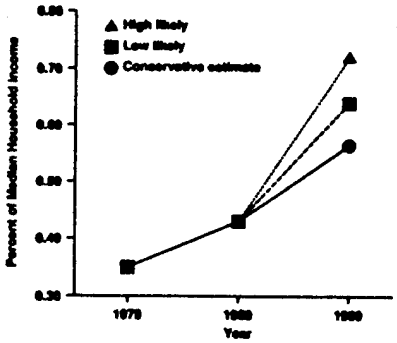
It is not hard to realize that the quantities of water used in the future will be impacted by environmental pressures and changing societal interests.
Congressional Research Service

Water is a critical natural resource and consumption depends upon many factors, most notably, population. As the American population has increased so have water consumption rates and water prices. In the U.S., over 400 billion gallons of water are used every day (Carter, 1994, p. 18). "According to the U.S. Department of Housing and Urban Development (HUD), personal bathing and waste disposal account for more than 50 percent of the water used in the United States. It's estimated that toilet flushing in America uses 4.8 billion gallons a day" (Bakke, 1994, p. 62).

Continued predictions of water consumption rising rates as shown by Figure 3 (Russell & Woodcock, 1992, p. 69) combined with environmental concerns leave no doubt why increased regulation has specifically targeted water conservation.



Past and projected average water rates



Typical water bill as a percentage of median family income

Fig. 3 -- Water rate projections

A provision of the Comprehensive Energy Policy Act of 1992 took effect January 1, 1994, and made water-saving devices like low-flow toilets, showerheads and faucet aerators mandatory in all new construction and remodeling projects (Russell & Woodcock, 1992, p. 63). Higher rates affect everyone, but due to rate structure, the bulk of the impact is borne by large volume users, including lodging facilities.

Water conservation in the lodging industry.

There's a common misconception that if you're doing something environmental, it's either going to cost you more or it's going to lower your standards.
Tedd Saunders, USA Today

Lodging facilities are a major consumer of water in all areas of daily operation from food service facilities to laundries to guest rooms. A 1989 study by Redlin and DeRoos surveyed 408 properties to determine average water consumption and water use trends in the lodging industry. They determined the U.S. lodging industry used 154 billion gallons of water in 1988. This equated to average hotel guestroom use of 144 gallons of water per day. Using the national average of $2.25 per 1,000 gallons, the total annual bill was approximately $346 million or $118 per room. Additionally, the more upscale or larger the property, the higher the average per room consumption per day (Shaw, 1990, pp. B-2, B-28).

These astronomical figures coupled with continued rising rate (rates have doubled or tripled in some areas of the country) caused hoteliers to explore and implement water conservation techniques to at least preserve if not increase their bottom line. An added benefit is the growing number of people who are

environmentally conscious and heartily approve of conservation methods being undertaken by the lodging industry. Customer approval has allowed hoteliers to take the plunge and institute measures that directly impact guests. Both hoteliers and customers have begun to realize that less does not automatically mean reduced levels of service.

Hoteliers' profits swell.

By changing to water-efficient equipment, a hotel or motel can reduce its water use by 15 percent to 30 percent or more.
John Flowers, WAVE program administrator

Water conservation efforts by hoteliers have ranged from the simple installation of water flow restrictors to more complex installation of rinse water re-use laundry systems. Other initiatives have been simple changes in operating procedures like watering the lawn at dusk to reduce evaporation and sweeping the sidewalk rather than hosing it down. One of the more recent initiatives to be implemented was towel and bed linen re-use programs for guests at their discretion. Whatever the methods utilized, savings from the various initiatives realized by various properties have been tremendous:

- The Sheraton Hotel and Towers, Seattle, Washington, and the Sheraton Long Beach Hotel, Long Beach, California, were retrofitted with laundry-water re-use systems that treat and re-use the final rinse water of the preceding wash for the next wash cycle. Company officials estimated savings of $39,000 a year (Shaw, 1993, p. 17).

- The Westin Copley Place, Boston, Massachusetts, saved 2 million gallons of water and approximately $50,000 with the installation of a laundry-water extract rinse re-use system (Shaw, 1993, p. 17).

- Marriott properties (ten) in northern New Jersey send their laundry to a consolidated laundry facility. This facility uses congeneration and heat reclamation techniques that save more than $125,000 per year in water and energy costs (Shaw, 1993, p. 17).

- The Marriott, Jacksonville, Florida, combined a rinse-water-reclamation program with injecting ozone rather than costlier chemicals into the water. Not only does the ozone cost less than previously used chemicals, it cleans more efficiently and has extended the life of the hotel's linens. The two systems were estimated to save $20,000 in annual water and energy bills (Shaw, 1993, p. 17).

- The Westin St. Francis, San Francisco, California, installed a laundry-water re-use system and saved about 3 million gallons of water and $36,000 annually. By eliminating a flushing cycle in the ice machines another 1,500 gallons of water per day was saved. These are only two of the many property-wide initiatives implemented that resulted in savings of 45 million gallons per year (Jesitus, 1992b, p. 45).

- The Boston Park Plaza, Boston, Massachusetts, installed faucet aerators, low-flow showerheads and toilets in all guest rooms for annual savings of over 16.5 million gallons of water (Glanzrock, 1995, p. 33) and $142,347 (Siems, 1994, p. 8). The installation of a water-filtration system re-uses 6.5 million of the 10 million gallons used annually for laundry (Makower, 1994a, p. 42).

- The Westin Bayshore, Vancouver, British Columbia, Canada, installed low-consumption showerheads and toilets in its 75 designated green rooms and reduced water use by 40 percent (Alexander, 1994, p. T-14).

- The Harmony, St. John, U. S. Virgin Islands, operates independently of the island's water lines. The landscaping is completely indigenous plants that survive on the natural rainfall. Rainwater is used, chemically treated and re-used to completely eliminate water bills (Dempsey, 1993, p. 33).

- The Hayman Resort, Hayman Island, Australia, produces its own fresh water and treats sewage. It collects rain water from all roofs on the island which is mixed with desalinated water to create pure drinkable water. Self-sufficient, the resort has no water bill (IHA, 1993, p. 60).

- The Royal York, Toronto, Ontario, Canada, discovered that 15 to 20 percent of the guests opt to re-use their towels. This program has resulted in savings of approximately 500,000 gallons of water per year, plus energy and detergent (Tefft, 1994, p. 26).

Conclusions

If certain events continue, much of America's natural beauty will become nothing more than a memory.

Walt Disney

The overwhelming amount of literature written on environmentalism in the lodging industry led to two conclusions: the green lodging trend will continue and the benefits of going green are worth pursuing. With these observations in mind, along with the inexplicable tie between AF lodging and lodging industry standards, the AF should piggyback on the lodging industry's environmental successes, utilizing their green knowledge and experience to gain similar benefits. Instituting the same types of actions taken by the lodging industry will help AF lodging operations succeed in fulfilling the AF environmental mission and do its part to ensure Walt Disney's prediction does not come true.

Green Trend Predicted to Continue

If one individual convinced two people to do something for the environment, and the next day each convinced two more, and so on, and so on . . . it would take less than a month to get everyone in the United States to take some kind of action.

Anonymous

Going green was not easy; it required support from all organization members, especially visible support of top level management. Top level support required the pledging of resources, especially the expenditure of funds at some point. Probable increased restrictive legislation and increasing customer approval of environmental

programs suggested that the lodging industry will continue to proactively address environmental issues. The financial rewards possible from undertaking green programs may provide the needed impetus for the entire industry to go green. The success of hoteliers who have instituted green measures has provided a powerful incentive to other hoteliers to join the movement. Greening is more attractive because of the growth in organizations dedicated to increasing awareness of environmental issues, specifically concerning lodging. Readily available information eliminated the need to start researching from scratch and has proven helpful to many companies. The green movement appeared to be steadily gaining strength and popularity which leads to the prediction of continued growth.

Benefits of Going Green Are Well Worth Pursuing

We're committed to it because it makes good business sense.
It's fortunate that it's also the right thing to do.
Graham Jeffrey, General Manager
Beau-Arts Willard, Washington, DC

The benefits realized by going green varied from company to company and took a variety of forms, but all related to the bottom line in some way--a compelling reason to pursue green operations. Perhaps the best incentive for businesses was the opportunity to increase profitability. First, many lodging operations increased their bottom line through reduced costs due to lower utility bills, lower waste disposal bills, and items like tableware and small equipment recovered from the outgoing garbage as it was sorted for recycling. Second, the sale of recyclable

materials, although not guaranteed because of fluctuating prices for various items, proved profitable in many cases. Third, many operations experienced an increase in their customer base--more customers equals more income. A positive environmental image appealed to a specific market niche of environmentally aware and demanding customers. An enhanced reputation within the community and with guests built upon itself, attracting customers and increasing the corporation's market competitiveness. Community and customer recognition for helping build a sustainable industry and for being proactive in environmental stewardship projected a positive brand image attracting more customers who make up the environmental consumer niche. In addition, many companies found their employees became more highly motivated after the company took a positive environmental stand and instituted supportive practices. The employees took more pride in their work, leading to lower turnover and ultimately resulted in higher quality employees.

The realization that environmentally friendly practices have positive impacts on the environment, in addition to positive impacts on the bottom line, made going green a win-win situation. Less waste is generated, less energy is used, and less water is used. While benefiting the earth, these practices, as mentioned above, ultimately and positively affect the bottom line by reducing costs and increasing sales. An additional benefit is the education of the employees and the customers. Education increased the number of people who understand the environmental challenges faced and who understand what can be done about them. This spread of knowledge has increased the chance to succeed in overcoming those challenges.

Recommendations

Nobody makes a greater mistake than he who did nothing because he could only do a little.

Edmund Burke

Air Force lodging operations have much in common with their civilian counterpart, the lodging industry. In fact, AF lodging operations model themselves after civilian lodging industry standards as closely as possible in all respects from decor and furniture style to amenities provided to guests. Changing consumer attitudes and increased legislation will affect AF activities as it has civilian activities. Federal legislation already governs AF policy on many environmental issues. Consumer concerns recently caused a change to be added to AF MANUAL 34-603, Air Force Lodging Program Management, which provides general guidance and procedures for AF lodging operations. This change offers AF lodging operations the option of instituting a towel re-use program. This same initiative has already been implemented in many civilian lodging facilities. As AF lodging appears to be on a parallel path to the green movement currently underway in the lodging industry, the extensive research in and progress by the lodging industry in implementing initiatives designed to increase profitability while preserving the environment should be used as a model by AF lodging operations.

The greening accomplishments of the lodging industry have not been easily obtained nor have they been an overnight phenomenon. It took much hard work at all levels to implement programs to integrate environmental responsibility with

economic feasibility. The process has been slower in some companies than others due to commitment level and resources available. The level of commitment is probably the most important step for success. The green concept must be endorsed and supported by the highest levels. Some initiatives require little funding or effort; others require more funding and ingenuity. Top level management must work to identify funding sources and ensure environmental initiatives compete equally for funding. When top level support is evident, any program is easier to implement. It is also important to realize that a slow, well thought out methodical approach will be more successful than a rapidly instituted haphazard program. Continuous improvement of a strongly rooted program should be the overall goal.

Considering the green movement in the AF and the historic parallel between AF lodging operations and the lodging industry, the GO GREEN program and accompanying lodging checklists is recommended for adoption by the Air Force Services Agency to be distributed to base level Services squadrons. A short description of the program and the checklists follows. Several recommendations for further study are also outlined. The actual GO GREEN program and checklists were formatted on separate pages as they would appear for distribution.

GO GREEN Program

It's not easy being green.
Kermit the Frog, Sesame Street

The GO GREEN program was developed to provide general guidance for the development, implementation, and maintenance of new green initiatives and for

expansion of existing programs. The GO GREEN concept can be used by any organization but the accompanying checklists were designed specifically for AF lodging operations.

AF Lodging Checklists

That's one small step for man, one giant leap for mankind.
Neil Armstrong

These checklists were developed to allow AF lodging managers to perform a non-technical environmental audit in the areas of energy conservation, solid waste minimization, and water conservation. The checklists document some easy and inexpensive initiatives as well as some more difficult and expensive to implement. The checklists should not be considered complete. Organization personnel will have ideas that should be added and new initiatives in the lodging industry should be tracked for adaptability. (See Appendix B for potential savings associated with initiatives implementation).

Future Studies

The journey of a thousand miles begins with a single step.
Chinese proverb

If the GO GREEN program is adopted, the AF lodging checklists can be incorporated into each unit's self-inspection program. Major commands may find the checklist format an easy method to track individual unit progress in furthering

the environmental awareness of employees and guests. Unit efforts and progress toward more environmentally friendly daily operations will also be readily apparent and easily tracked as more checklist initiatives are implemented over time.

Air Force Services is responsible for many programs that have similar civilian counterparts. The green revolution has also touched these civilian operations and environmentally friendly practices investigated and implemented. The Air Force Services Agency should investigate the green initiatives undertaken by each appropriate corresponding civilian organization and use that information and experience to develop environmental audit checklists like those developed for AF lodging. Operations that should be addressed are:

- Dining facilities, clubs, and fast food establishments
- Recreation facilities including golf courses and swimming pools
- Outdoor recreation programs

In addition, other environmental issues should be studied and checklists developed for use in relevant Services operations. Issues that should be investigated include:

- Air quality
- Employee education about environmental issues and regulatory compliance
- Chemical usage

Implementation Package

GO GREEN

GO GREEN, an easily remembered acronym characterizing its environmental essence, was created to identify the elements fundamental to the successful development, implementation, and maintenance of environmental initiatives and the expansion of existing environmental programs. The seven principles are:

Gather information
Organize a game plan

Goal setting
Recruit employees and their ideas
Educate employees
Educate guests
Note accomplishments

Gather information

Audit your facility in each department (housekeeping, maintenance, and administrative) to determine energy use, water use, and solid waste generation. It is imperative to understand how and where energy and water is used as well as the types of waste generated. This will help determine strategies to reduce energy and water use and determine markets for solid waste.

Organize a game plan

Identify steps designed to promote energy and water efficiency and conservation techniques. If recycling of certain materials is already conducted on base, determine how you can join those efforts. If certain materials that are generated by your operation are not currently being recycled, investigate alternate ways to dispose of these materials. Explore options for waste reduction by examining all materials used in daily operations and how they are used. Identify products that use less packaging, are less toxic, or have a higher recycled content than those currently used.

Goal setting

Using the information gathered in the two steps above, set goals based on the baseline data. Progress can then be tracked and plans modified if necessary. Prioritize initiatives to be implemented. This will depend upon funds available and ease of implementation. Don't be afraid to start with specific issues like replacing Styrofoam cups with ceramic mugs. Build on successes--one step at a time.

Recruit employees and their ideas

Ask employees for input and ideas on how the operation can become more environmentally friendly. Many of the best ideas come from the people who are on the front line of an operation. Develop a Green Team with a volunteer representative from each department and management level to be responsible for monitoring progress, bringing forward ideas from fellow employees for consideration, and overall promotion of the program.

Educate employees

The more people who understand the environmental challenges faced--and what can be done about them--the better the chance to overcome them. Develop an employee training program emphasizing the importance of sustainable development, environmental issues, their additional responsibilities for the program, and their role in the program's success. Success of the green program is largely dependent on their commitment. Identify idea submission procedures, explain how ideas will be reviewed and evaluated, discuss any award programs, etc.

Educate customers

Any initiatives undertaken that impact the guests will be more successful with guest support. Education as to why conservation is important will build support. Provide in-room information on the environmental programs and their importance and request guest participation. Ask for guest feedback on programs in effect and solicit their ideas on how to make the overall green program better. Again, the more people who understand the environmental impact of certain actions, the better the chance to change those actions.

Note accomplishments

Communication is an important key in making environmental efforts work. Recognition of employees for contributions helps strengthen the program as well as increase morale. Setting goals, tracking progress, and advertising achievements reinforces the program importance. Publish accomplishments in the base paper. Share your ideas with other bases. Use the local paper as a conduit to notify the community of your concern for the environment.

ALL PURPOSE CHECKLIST		PAGE OF PAGES		
TITLE/SUBJECT/ACTIVITY/FUNCTIONAL AREA **Energy Conservation Checklist -- Lodging**		OPR	DATE	
NO.	ITEM (Assign a paragraph number to each item. Draw a horizontal line between each major paragraph.)	YES	NO	N/A
	Guestrooms			
1.	Have gasket insulators been installed in all wall outlets and switches?			
2.	Is the door weather-stripped and caulked?			
3.	Are the windows weather-stripped and caulked?			
4.	Are the water pipes properly insulated?			
5.	Are the windows covered in some manner? a. reflective film?			
	b. mini-blinds?			
	c. insulated drapes?			
6.	If replacement windows are planned, are they thermopane or double-glazed?			
7.	Have the room lights been retrofitted to compact fluorescents?			
8.	If not, is there a plan to do so as they burn out?			
	Common areas			
9.	Have the exit sign lightbulbs been replaced with compact fluorescent bulbs, or better yet, light-emitting diodes (LED) energy-efficient bulbs?			
10.	If not, is there a plan to do so as they burn out?			
11.	If there are inside hallways, are the hallway temperatures set slightly warmer than the rooms temperature in summer and slightly cooler than the rooms temperature in winter?			
12.	Have the vending machines been delamped (lightbulbs disconnected)?			

NO.	ITEM (Assign a paragraph number to each item. Draw a horizontal line between each major paragraph.)	YES	NO	N/A
13.	Is the building equipped with double-doored entry ways? a. lobby?			
	b. back entrances?			
	c. side entrances?			
14.	Have fluorescent (tube) lights had reflectors installed, been replaced with more energy-efficient bulbs, or had the ballasts replaced with electronic ballasts? a. hallways?			
	b. offices?			
	c. lobby			
	d. break rooms?			
	e. laundry rooms?			
	Housekeeping practices			
15.	Do the housekeepers open the drapes/blinds and use natural light to clean rooms?			
16.	Are the housekeepers trained to shut the drapes/blinds after cleaning a room?			
17.	Do housekeepers close the door when cleaning a guestroom?			
18.	Do the housekeepers regularly dust the refrigerator coils?			
19.	Do the housekeepers regularly check the seal on the refrigerator/freezer door?			
20.	Are the housekeepers trained to reset the room thermostats to a specified temperature?			
21.	If freezers are not self-defrosting, are they regularly defrosted to eliminate ice build up?			
22.	Do housekeepers periodically check the temperatures of refrigerators (38-42 degrees) and freezers (0-5 degrees) to ensure appropriate temperature settings?			

ALL PURPOSE CHECKLIST		PAGE OF PAGES		
TITLE/SUBJECT/ACTIVITY/FUNCTIONAL AREA		OPR	DATE	
NO.	ITEM (Assign a paragraph number to each item. Draw a horizontal line between each major paragraph.)	YES	NO	N/A
23.	Are TVs unplugged in rooms not in use?			
24.	Do housekeepers check to ensure windows are closed when the heat or A/C is running?			
25.	Do housekeepers turn of lights, radios, and TVs in unoccupied rooms?			
26.	Do housekeepers regularly dust the light bulbs?			
	Administrative areas			
27.	Are lights turned off when rooms are not in use? a. offices?			
	b. storage areas?			
	c. break rooms?			
28.	Can natural light be more fully utilized by placing desks and work areas next to windows?			
29.	Are all office machines turned off in the evenings and over weekends? a. copiers?			
	b. computers?			
	c. typewriters?			
	Maintenance practices			
30.	Are the heating system and A/C system filters changed regularly?			
31.	Are all ducts in the heating and A/C systems properly sealed and insulated?			
32.	Do all water heaters have insulating blankets or jackets?			
33.	Are all hot water pipes insulated?			

NO.	ITEM (Assign a paragraph number to each item. Draw a horizontal line between each major paragraph.)	YES	NO	N/A
34.	Have water heaters been turned down to 130° F?			
35.	Is there a comprehensive maintenance program in place that requires periodic maintenance of all equipment and systems to ensure proper and efficient functioning (i.e., ice machines, heating and A/C systems)?			
36.	Are broken appliances, equipment, and furniture evaluated for financial feasibility of repair over replacement?			
	Appliance purchases			
37.	If new appliances must be purchased, are they the most energy-efficient model?			
38.	If electrical appliances are currently used, is it possible gas appliances can be used for future replacements?			
39.	If new refrigerators/freezers are purchased, are they standard instead of self-defrosting models?			
40.	If new dishwashers are purchased, are they models with booster heaters?			
41.	If new dishwashers are purchased, do they have short cycle selections and an "air dry" option?			
42.	If new washers are purchased, are they front-loading rather than top-loading machines?			
43.	If new dryers are purchased, do they have a moisture sensor control?			
44.	If new ovens are purchased, are they convention ovens?			
45.	If new gas stoves are purchased, do they have an electronic ignition system?			

ALL PURPOSE CHECKLIST		PAGE OF PAGES		
TITLE/SUBJECT/ACTIVITY/FUNCTIONAL AREA		OPR	DATE	
NO.	ITEM (Assign a paragraph number to each item. Draw a horizontal line between each major paragraph.)	YES	NO	N/A
	Laundry			
46.	Are all loads of bedding and towels washed full loads?			
47.	Are all loads of bedding and towels dried full loads?			
48.	Are employees trained not to overload dryers?			
49.	Is the automatic dry cycle used to prevent dryer from running longer than necessary?			
50.	Is the exhaust vent periodically checked and cleaned?			
51.	Do the dryers have hoods over the outside exhaust vents?			
52.	Are lint traps cleaned after every load of laundry?			
53.	Are the wash cycles used for laundry loads set for the appropriate temperature?			
	Grounds maintenance			
54.	Has the use of solar lights for pathway and driveway lights been investigated?			
55.	If there is a landscaping plan, does it call for the use of indigenous plants that can survive on natural rainfall alone?			
56.	Are A/C units shaded?			

NO.	ITEM (Assign a paragraph number to each item. Draw a horizontal line between each major paragraph.)	YES	NO	N/A
	Vehicle maintenance			
57.	Are routine maintenance procedures regularly scheduled and completed?			
	a. fuel filters cleaned/replaced?			
	b. tires properly inflated?			
	c. tune-ups performed?			
	d. air filters cleaned/replaced?			
	e. oil changed?			
	f. fan belt checked?			
	g. spark plugs checked?			
58.	Are vehicles outfitted with radial tires?			

ALL PURPOSE CHECKLIST		PAGE OF PAGES		
TITLE/SUBJECT/ACTIVITY/FUNCTIONAL AREA **Solid Waste Minimization Checklist -- Lodging**		OPR	DATE	
NO.	ITEM (Assign a paragraph number to each item. Draw a horizontal line between each major paragraph.)	YES	NO	N/A
	Guestrooms			
1.	Have refillable amenity dispensers for shampoo, conditioner, mouthwash and soap been installed to replace individual containers?			
2.	If not, is there a plan to phase in their installation?			
3.	If individual amenities are used, are the partially used containers and soaps donated to a local charitable organization?			
4.	If individual amenities are used, are they packaged in recyclable materials?			
5.	Have unnecessary amenities been removed from rooms?			
6.	Are the amenities provided biodegradable (vegetable-based) and non-animal tested?			
7.	Have individual creamer and sugar packages been replaced with bulk amounts in appropriate containers?			
8.	Are the tea bags oxygen- rather than chlorine-bleached and free of strings, tags, staples, and individual foil envelopes?			
9.	Are unbleached coffee filters used?			
10.	Are re-usable products rather than disposable items provided a. ceramic coffee mugs instead of Styrofoam cups?			
	b. glasses instead of Styrofoam cups?			
	c. cloth napkins instead of paper napkins?			
	d. metal tableware instead of plastic utensils?			
	e. mesh coffee filter instead of paper filters?			
11.	If disposable cups must be used, are they paper rather than Styrofoam?			

NO.	ITEM (Assign a paragraph number to each item. Draw a horizontal line between each major paragraph.)	YES	NO	N/A
12.	Have recycling bins been placed in each guestroom?			
13.	When wooden hangers must be replaced, are they replaced with hangers made from soft rather than hard woods?			
14.	If stationery and envelopes are provided, are they recycled paper content?			
15.	Is toilet paper made from recycled materials?			
16.	If paper towels are provided, are they made from recycled materials?			
17.	Is there too much "paper" information provided in rooms? a. can it be condensed? b. can a TV channel be utilized to provide the information?			
	Housekeeping practices			
18.	Are housekeepers using cloth cleaning rags instead of paper towels?			
19.	Are lined garbage cans emptied instead of replacing the garbage bag every day?			
20.	Are the garbage bags used recycled/recyclable?			
	Administrative areas			
21.	Is there a recycling program in place? a. aluminum cans?			
	b. cardboard?			
	c. fine paper?			
	d. computer paper?			
	e. newspaper?			
	f. telephone books?			
	g. glass, clear?			
	h. glass, colored?			

ALL PURPOSE CHECKLIST		PAGE OF PAGES		
TITLE/SUBJECT/ACTIVITY/FUNCTIONAL AREA		OPR	DATE	
NO.	ITEM (Assign a paragraph number to each item. Draw a horizontal line between each major paragraph.)	YES	NO	N/A
22.	Are re-usable products instead of disposable products being used?			
	a. ceramic coffee mugs instead of Styrofoam cups?			
	b. glasses instead of Styrofoam cups?			
	c. cloth napkins instead of paper napkins?			
	d. metal tableware instead of plastic utensils?			
	e. mesh coffee filter instead of paper filters?			
23.	If disposable cups must be used, are they paper rather than Styrofoam?			
24.	Are tea bags oxygen- rather than chlorine-bleached and free of strings, tags, staples and individual foil envelopes?			
25.	Are unbleached coffee filters used?			
26.	Does all paper used contain recycled content?			
27.	Is all paper used white instead of colored?			
28.	Do all forms used contain recycled content?			
29.	Has the number of individual copies produced been reduced?			
	a. a routing system used?			
	b. e-mail used whenever possible?			
	c. a centralized bulletin board system used?			
30.	Is less paper used whenever possible and appropriate?			
	a. double-sided copies?			
	b. single-spaced documents?			
	c. document margins reduced?			
	d. documents edited before printing?			
	e. printing drafts on used paper?			
	f. printing internal memos on used paper?			
	g. using computer software for faxing (without printing)?			
	h. fax post-its or half-page fax cover sheets used?			

NO.	ITEM (Assign a paragraph number to each item. Draw a horizontal line between each major paragraph.)	YES	NO	N/A
31.	Can one erasable wall calendar replace the individual desk calendars?			
32.	Is there a worn bedding, towel and napkin re-use program in place? a. cut down to use as cleaning rags?			
	b. donated to charitable shelters?			
33.	If new mattresses are purchased, have you sought command approval to donate the used mattresses to a charitable shelter?			
34.	Are any batteries used being replaced with rechargeable batteries?			
35.	Are manila envelopes re-used by placing gummed labels over the previous addresses?			
36.	Are computer printer cartridges refilled and re-used?			
37.	Are re-inkable or multistrike typewriter ribbons used?			
38.	Does the fax machine use plain paper instead of standard fax paper?			
39.	Are refillable pens used?			
40.	If not, are pens made from recycled/recyclable plastic?			
41.	Are refillable pencils used?			
42.	If not, are the pencils used made from recycled cardboard or wood instead of virgin wood?			
	Supply purchasing			
43.	Are all cleaning supplies citrus-based, non-toxic biodegradable products?			
44.	Are all cleaning supplies bought in bulk and refillable containers used?			

ALL PURPOSE CHECKLIST		PAGE OF PAGES		
TITLE/SUBJECT/ACTIVITY/FUNCTIONAL AREA		OPR	DATE	
NO.	ITEM (Assign a paragraph number to each item. Draw a horizontal line between each major paragraph.)	YES	NO	N/A
45.	Are only non-aerosol spray cleaning items purchased?			
46.	Is the laundry detergent phosphate free?			
47.	If bleach is used, is it non-chlorine bleach?			
48.	Is minimal packaging required on any supplies bought outside the supply system?			
49.	Are the sponges used cellulose rather than polyurethane or sea-sponges?			
50.	If a new copy machine is purchased, does it have "duplex" and power-saver features?			
	<u>Grounds maintenance</u>			
51.	If you are responsible for lawn maintenance, is there a base composting program you can use to dispose of clippings, etc.?			
52.	If there is no base program, have you investigated an alternate composting program to eliminate the clippings from your waste stream?			

ALL PURPOSE CHECKLIST		PAGE OF PAGES		
TITLE/SUBJECT/ACTIVITY/FUNCTIONAL AREA **Water Conservation Checklist -- Lodging**		OPR	DATE	
NO.	ITEM (Assign a paragraph number to each item. Draw a horizontal line between each major paragraph.)	YES	NO	N/A
	Guestrooms			
1.	Have toilet dams been placed in all regular toilets?			
2.	Have the toilet tank valves been checked to ensure they are properly seated to eliminate leaking?			
3.	Is there a plan to systematically replace regular toilets with low-flow toilets?			
4.	Have low-flow showerheads been installed in all rooms?			
5.	Have faucet aerators been installed in all faucets? a. kitchens?			
	b. bathrooms?			
6.	Has the optional towel re-use program authorized by AFMAN 34-603, Air Force Lodging Program Management been implemented?			
	Housekeeping practices			
7.	Do housekeepers immediately report any leaks to maintenance?			
8.	Do housekeepers conserve water during cleaning operations? a. cleaning sinks?			
	b. cleaning tubs?			
	c. washing dishes?			
	Laundry			
9.	Are all loads of bedding and towels washed full loads?			
10.	If there is not a full load, are water levels set to the appropriate amount?			
11.	Has a system to re-use rinse water been investigated?			

NO.	ITEM (Assign a paragraph number to each item. Draw a horizontal line between each major paragraph.)	YES	NO	N/A
12.	Has a system to collect and use "gray water" been investigated?			
	Maintenance			
13.	Is there a system in place to ensure prompt response to fixing any reported leaks?			
	Appliance purchasing			
14.	When new washers are purchased, are they front loading models?			
	Grounds maintenance			
15.	Are the grounds watered in the evening to reduce water evaporation?			
16.	Are soaker hoses used to reduce evaporation resulting from sprinkler use?			
17.	Are all hose connections checked to eliminate leaks?			
18.	Is mulch used around trees and flower beds?			
19.	Are sidewalks, parking lots, etc. swept with a broom instead of hosed down?			

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Appendices

Appendix A: Associations, Consulting Services, and Information Sources

Associations

AH & MA.
Environmental Committee
1201 New York Avenue NW, Suite 600
Washington, DC 20005-3931
(202) 289-3193
(202) 289-3158 (FAX)

AH & MA created an Environmental Committee to serve as an information clearinghouse and communications center for environmental matters. It engages in environmentally related research and the development of educational materials and management guidelines to assist hoteliers with environmental concerns and questions. Support can be obtained through the association's telephone inquiry service. AH & MA also publishes a book, Recycling and Source Reduction for the Lodging Industry. It is available to association members for $10 and non-members for $20 (AH & MA, personal communication, February 23, 1995).

"Green" Hotels Association.
P. O. Box 420212
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(713) 789-8889
(713) 789-9786 (FAX)

Point of Contact
Patricia Griffin, President

The goal of the "Green" Hotels Association is to provide the information and tools needed to implement environmental programs in lodging facilities. For a fee, members receive environmental information designed to help facilities successfully implement green measures. A catalog of some of the environmental products

currently available has been developed and provided to members. Included in the catalog are items like a towel rack hanger that asks guests to participate in a towel re-use program and cards that explain a similar bed linen re-use program. Other items include a water conservation table tent suggesting ways guests can use less water and a guest room newsletter. Products ranging from faucet aerators and low-flow showerheads to guest room recycling bins and refillable amenity dispensers are also featured in the catalog. Membership allows lodging facilities to display the "Green" Hotels Association logo to signify environmental concern, offers opportunities for shared information on Earth-saving ideas, and entitles members to share in the public relations benefits as the association grows and becomes more widely recognized. A copy of the association's extensive guidelines detailing possible environmental initiatives covering all departments is provided (P. Griffin, personal communication, March 11, 1995).

Consulting Services

HVS Eco Services.
372 Willis Avenue
Mineola, New York 11501
(516) 248-8828
(516) 742-3059 (FAX)

Point of Contact
Kirk Iwanowski, Vice President

HVS Eco Services, a division of Hospitality Valuation Services (HVS), is an environmental consulting practice designed to assist hoteliers in complying with the myriad of new and pending environmental legislation that affects the lodging industry. Founded and backed by experienced hoteliers, the company follows a

business approach to environmental initiatives. All environmental initiatives are evaluated for specific monetary payback and must be totally complementary to the guest experience before they are recommended.

Eco Services for a fee between $1,500 and $5,000, depending on property size, will conduct an in-depth property evaluation and energy audit that analyzes all departments in solid waste management and recycling, energy efficiency, water conservation, legislative compliance, and employee environmental education. A comprehensive report is prepared that prioritizes recommended departmental strategies and tactics by cost, outlines implementation procedures, and defines estimated costs and payback periods. Included with the report is a list of environmentally responsible manufacturers and service providers with recommended products at comparable or lower prices than those prices currently paid.

As a separate service, Eco Services will provide employee environmental education and training to ensure the suggested recommendations are implemented and maintained in a manner to maximize savings and ensure long-term program success. An employee education program, complete with training tools and support materials, is developed for the specific property by Eco Services in conjunction with property representatives.

Eco Services has established the ECOTEL designation, a recognized "green seal" for the lodging industry. Under its rating system, properties with comprehensive environmental programs, are awarded the ECOTEL seal.

ECOTELS are included in an expansive promotional campaign that includes an international directory listing (similar to the Mobil Travel Guide), a 1-800 reservation system, and an international advertising campaign. The ECOTEL designation provides "the only system that allows travellers to compare the environmental efforts of hotels" (K. J. Iwanowski, personal communication, July 20, 1994).

Eco-Logical Solutions, Inc.
64 Arlington Street, Suite 314
Boston, Massachusetts 02116-3912
(617) 457-2411
(617) 426-2060 (FAX)

Point of Contact
Elizabeth Kay, Vice President

Eco-Logical Solutions, Inc. is an environmental management consulting firm created to take a comprehensive approach to creating a healthy balance between enhanced service quality and environmental stewardship. Eco-Logical Solutions works with a property's designated representatives to develop a comprehensive program to fit each property's unique needs, physical characteristics, corporate culture, and budget.

Eco-Logical Solutions will conduct a thorough assessment with a walk-through facility inspection, review of data and procedures, and interviews with key personnel. Following the assessment, a comprehensive report documenting findings and strategic recommendations focusing on waste reduction and recycling, water and energy efficiency, promoting environmental health, employee education and empowerment, and marketing opportunities is provided. This report is used to determine the appropriate next steps. Eco-Logical Solutions also works with the property team to develop an environmental charter to guide the on-going

incorporation of environmental initiatives into the property's operations, personnel management, and marketing strategy. Products, vendors, and systems for reducing and recycling waste, using energy and water most efficiently, and improving environmental health are identified. Training to incorporate the environmental program into the company culture is provided to all members of the company, from top management to line employees, and encourages employees to take ownership of the program. Eco-Logical Solutions works with the property team to develop a targeted marketing and communications strategy to promote and enhance the property's environmental achievements (E. A. Kay, personal communication, March 31, 1995).

Information Sources

Buy Recycled Business Alliance.

National Recycling Coalition
1101 30th Street NW, Suite 305
Washington, DC 20007
(202) 625-6406
(202) 625-6409 (FAX)

The Alliance is a group of leading companies committed to developing a market for recycled content products through education and leadership by example. These companies provide direction, leadership, and funding to accomplish this mission. Companies interested in using recycled products can join this organization at no charge. All that is required is a commitment to purchase recycled products. Members receive a free 30 page guidebook designed to help organizations implement a recycled product purchasing program. A free newsletter with the latest

on recycled products is distributed to members quarterly. Members have networking opportunities with other organizations and are eligible for discounts on products, catalogs, and computer services (Buy Recycled Business Alliance, personal communication, 1 May 95).

Green Lights Program.

U.S. Environmental Protection Agency
401 M Street, SW (6202J)
Washington, DC 20460
(202) 775-6650
(202) 775-6680 (FAX)

Alternate Point of Contact
Micki Wilcox, Analyst
ICF Consulting Group
9300 Lee Highway
Fairfax, Virginia 22031-1207
(703) 934-3318
(703) 934-3530 (FAX)

The Green Lights program is a voluntary, non-regulatory initiative created and supported by the EPA. It is designed to prevent pollution through the use of energy-efficient lighting. The Green Lights Program was designed to accommodate all businesses but regulations specific to federal agencies prompted the EPA to launch a specific Federal Green Lights Program. The agreements differ slightly and the following provisions are specifically for federal agencies. Participants in the program must sign a Memorandum of Understanding (MOU) with the EPA agreeing to survey 100 percent of their facilities and identify lighting upgrades that will reduce energy use 50 percent without compromising lighting quality. Participants must upgrade 90 percent of the square footage of the facilities no later than January 1, 2005. Additionally, they must implement all lighting projects with payback periods of less than 10 years by January 1, 2005, and work to continually educate employees about the benefits of energy-efficient lighting. Finally, participants must appoint an

implementation manager to oversee their progress and report that progress to the EPA at least annually. In return, the EPA provides support systems to help participants obtain information on energy-efficient technology, financing options, and public recognition opportunities. Participants receive extensive technical support through a technical information hotline, a comprehensive Lighting Upgrade Manual, and training workshops. On-site technical guidance is also available. Participants receive state-of-the-art computer software that helps survey facilities and select lighting upgrade options that maximize energy savings and meet profitability goals. A finance directory, computer databases of every third-party financing program available, is supplied as well as funding options designed specifically for federal agencies. The EPA provides ready-to-use materials for internal promotion of upgrade successes and also generates external recognition of agencies environmental leadership through news articles, media events, and public service advertisements (M. Wilcox, personal communication, March 10, 1995).

Water Alliances for Voluntary Efficiency (WAVE).

Environmental Protection Agency
401 M Street, SW (4204)
Washington, DC 20460
(202) 260-7288
(202) 260-1827 (FAX)

Alternate Point of Contact
Marilyn Arnold, Analyst
Pequod Associates, Inc.
17993 Cowan, Suite B
Irvine, California 92714
(202) 543-5808

WAVE is a non-regulatory water-efficiency partnership created and supported by the EPA. Its mission is to encourage any U.S. commercial business interested in reducing water consumption and costs, but specifically lodging companies, to reduce water consumption while increasing efficiency, profitability,

and competitiveness. Program participants sign an MOU with the EPA pledging to endorse WAVE's water-efficiency concepts, survey water-use devices in all facilities, appoint an implementation manager, install profitable upgrades that reduce consumption within 5 years, and report progress to the EPA. In return, the EPA provides nationwide public service advertising, in-room promotional materials, and ready-to-use press releases. Members receive water-use analysis software to survey and track water consumption and identify savings opportunities with "what if" analyses. The EPA staffs a nationwide help line and provides technical support, training, and workshops (M. Arnold, personal communication, March 27, 1995).

WasteWi$e.
U.S. Environmental Protection Agency
401 M Street, SW (5306)
Washington, DC 20460
(800) 372-9473
(202) 260-4196 (FAX)

The WasteWi$e program is a voluntary, non-regulatory program designed to help businesses reduce the amount of solid waste they send to landfills. Members decide which facilities will be included in the program, identify an implementation manager who can commit resources to the program, choose goals, and report progress annually to the EPA. Becoming a member entails commitment to achieving goals in each of the following three areas: waste prevention, recycling collection, and buying or manufacturing recycled products. For waste prevention, a company must implement three significant waste prevention actions that are practical and cost-effective. Recycling collection requires a commitment to expand

or improve programs for collecting recyclables. Non-manufacturing firms commit to increase the recycled content in purchased products, either by purchasing recycled products instead of virgin products or by increasing the recycled content in those recycled products already being purchased. In return, the EPA provides the manual, A Business Guide for Reducing Solid Waste, to assist in conducting a waste assessment, case studies of successful business waste reduction programs, "tip sheets" on waste reduction, and program updates. The EPA also maintains a toll-free hotline to provide technical assistance. The EPA also provides members with ready-to-use internal publication materials as well as providing external advertising through news stories and public service announcements (WasteWi$e, personal communication, March 27, 1995).

Canadian Pacific Hotels & Resorts.
Department of Environmental Affairs
One University Avenue, Suite 1400
Toronto, Ontario, Canada M5J 2P1
(416) 367-7101
(416) 863-6097 (FAX)

Point of Contact
Ann Checkley, Director of Communications and Environmental Affairs

In the fall of 1990, Canadian Pacific Hotels and Resorts (CPH&R) undertook the development of an environmental program for all it's hotels in Canada. Environmental committees were formed at all properties by the end of 1990, and in January 1991, an environmental audit was performed in all hotels. The audit consisted of a two-part survey. The first part surveyed specific departments to gather specific information on hotel operations. The second part was given to every employee in the chain and was designed to show the level of interest in the

environment among the employees and determine how much support a green program would have within the chain. The level of response was tremendous and indicated overwhelming support.

A number of employee suggestions were incorporated into the 16 point action plan CPH&R developed to address waste management, energy conservation, purchasing, and water conservation. Based on the 16 point action plan, CPH&R contracted with Warner Troyer, an environmentalist writer, to produce The Green Partnership Guide--an accessible and friendly manual designed to help all employees understand and implement the action plan.

CPH&R's dedication to helping protect the environment is evident in its willingness to share their plan with others. An information package outlining the corporation's background research, survey results, and 16 point action plan as well as sample pages from The Green Partnership Guide are provided to all requesters. A complete copy of the manual may also be requested through the Environmental Affairs Department (A. Checkley, personal communication, March 22, 1995).

PRO-ACT.
HQ Air Force Center for Environmental Excellence (HQ AFCEE)
Pollution Prevention Directorate
8106 Chennault Road, Building 1161
Brooks AFB, TX 78235-5318
DSN 240-4214 COMM (800) 233-4356 or (210) 536-4214
DSN 240-4254 COMM (210) 212-5432 (FAX)

Point of Contact
C. E. "Skip" Sowards
PRO-ACT Project Manager

PRO-ACT is a base-level pollution prevention resource sponsored by HQ AFCEE. PRO-ACT serves as the AF's environmental information clearinghouse and research service and was designed to help AF personnel meet pollution prevention goals and achieve environmental regulatory compliance. Information is available to all members of the USAF, the Air Force Reserve, the Air National Guard, and civilian employees.

PRO-ACT services include timely responses to inquiries concerning all AF environmental program areas, including air and water quality management, waste management and resource recovery, pesticide management, environmental education programs, and occupational safety and health. Users may ask unlimited questions and receive up to 40 hours of free PRO-ACT research on each topic. PRO-ACT also disseminates crossfeed information concerning various environmental topics through four publications: CROSSTALK, Fact Sheets, Regulatory Alerts, and Pollution Prevention Success Stories. PRO-ACT can also provide access to electronic bulletin boards, technical document reviews, and pollution prevention studies (C. E. Sowards, personal communication, March 15, 1995).

Appendix B: Potential Savings for Initiatives Implementation

Savings for many of the initiatives are self-explanatory. However, statistics and pertinent information were provided wherever possible to more fully illustrate savings that can be realized through implementation of these initiatives.

Energy Conservation Initiatives

Energy efficiency saves money through reduced energy use. In addition, the planet benefits because every kilowatt hour of electricity avoided prevents the emission of

- 1.5 pounds of carbon dioxide (the most important greenhouse gas),
- 5.8 grams of sulfur dioxide (a principal component of acid rain), and
- 2.5 grams of nitrogen oxide (precursor to both acid rain and smog) (Denton, 1994, pp. 220-222).

Guestrooms

1. Have gasket insulators been installed in all wall outlets and switches?
   - As much as 25-40 percent of cooling and heating costs are caused by air leakage from the building envelope ("Six Smart Ways," 1995, p. 46).

2. Is the door weather-stripped and caulked?
   - See Guestrooms item 1

3. Are the windows weather-stripped and caulked?
   - See Guestrooms item 1

4. Are the water pipes properly insulated?
   - See Guestrooms item 1

5. Are the windows covered in some manner?
   a. reflective film?
      - Reflective film can
        - screen out as much as 75 percent of the sun's rays and lower summer A/C needs (Anderson, 1992, p. 15).
        - cut winter heat losses by 10-40 percent (The EarthWorks Group, 1991, p. 84).

b. mini-blinds?
   - According to researchers, white mini-blinds (even open ones) can reduce solar heat gain through windows by as much as 50 percent. Blinds that are turned down (window edge of blind pointing down) block more solar heat than blinds turned up (HL & P, 1995, p. 2).

c. insulated drapes?
   - "Thermal draperies, made with a thick, fiber-filled backing to fit snugly against the entire window frame, can reduce heat loss by as much as 50 percent" (MacEachern, 1990, p. 23).

6. If replacement windows are planned, are they thermopane or double-glazed?
   - Windows with a low insulating value (R-value) can waste about one-third of energy for heating and cooling a room. Glazed windows can be as energy efficient as insulated walls (The Green Group, 1992, p. 62).

7. Have the room lights been retrofitted to compact fluorescents?
   - Substituting a compact fluorescent bulb for a traditional bulb, over the life of the bulb, can
     - eliminate the energy equivalent of approximately one barrel of oil or 700 pounds of coal and therefore the production of one ton of carbon dioxide (the major greenhouse gas) and 14 pounds of sulfur dioxide (acid rain component) and
     - cut waste by using fewer bulbs (compact fluorescent bulbs last approximately 8-10 times longer than traditional bulbs) (The EarthWorks Group, 1991, p. 45).
   - Compact fluorescent bulbs use only about 1 quarter of the energy required for incandescent bulbs (The EarthWorks Group, 1991, p. 45).
   - Unlike incandescent bulbs that typically generate 95 percent of their energy as heat, compact fluorescent bulbs produce very little heat helping reduce A/C costs (Albright, 1994, p. 60).

8. If not, is there a plan to so as they burn out?

<u>Common areas</u>

9. Have the exit sign incandescent bulbs been replaced with compact fluorescent bulbs, or better yet, light-emitting diodes (LED) energy-efficient bulbs?
   - Compact fluorescent bulbs use about one-fourth the energy and last 8-12 times longer than incandescent bulbs (The EarthWorks Group, 1991, p. 45).
   - LED bulbs can consume as little as two kilowatts of energy--96 percent less energy than the typical 40 watt incandescent exit sign bulb. LEDs will last an average of 80-100 years (May 1994, p. 136).

10. If not, is there a plan to do so as they burn out?

11. If there are inside hallways, are the hallway temperatures set slightly warmer than the rooms temperature in summer and slightly cooler than the rooms temperature in winter?
    - Each 1° C (approximately 2° F) change in temperature from 22° C (approximately 72° F) reduces energy usage by eight percent (Wheatley, 1993, p. 94).

12. Have the vending machines been delamped (lightbulbs disconnected)?

13. Is the building equipped with double-doored entry ways?
    a. lobby?
    b. back entrances?
    c. side entrances?

14. Have fluorescent (tube) lights had reflectors installed, been replaced with more energy-efficient bulbs, or had the ballasts replaced with electronic ballasts?
    a. hallways?
    b. offices?
    c. lobby
    d. break rooms?
    e. laundry rooms?
        - Approximately one half the light in a standard fluorescent tube fixture is absorbed by the inside of the fixture. Installing reflectors redirects the "lost" light. Removing one half the bulbs reduces energy use by one half but still provides the same amount of light (The EarthWorks Group, 1991, p. 38).
        - T-8 trichromatic bulbs use 20 percent less energy and produce better color than standard "cool-white" tube bulbs (The EarthWorks Group, 1991, p. 64).
        - Electronic ballasts (current regulator) use less electricity than standard ballasts and don't hum or flicker (The EarthWorks Group, 1991, pp. 64-65).

Housekeeping practices

15. Do the housekeepers open the drapes/blinds and use natural light to clean rooms?

16. Are the housekeepers trained to shut the drapes/blinds after cleaning a room?

17. Do housekeepers close the door when cleaning a guestroom?

18. Do the housekeepers regularly dust the refrigerator coils?
    - Dirty coils increase energy use up to 10 percent (The Green Group, 1992, p. 86).

19. Do the housekeepers regularly check the seal on the refrigerator/freezer door?
    - Cold air can leak from a faulty seal causing more electricity to be used to keep the interior at proper temperature. With up to 10 percent of room energy used to run a refrigerator, a tight seal can help reduce refrigeration costs (The Green Group, 1992, p. 87).

20. Are the housekeepers trained to reset the room thermostats to a specified temperature?
    - The heating bill can be cut by 2 to 3 percent for every degree the thermostat is set back (MacEachern, 1990, pp. 176-177).

21. If freezers are not self-defrosting, are they regularly defrosted to eliminate ice build up?
    - Frost-free refrigerators are more convenient but regular refrigerators regularly defrosted to maintain cooling efficiency use less electricity (Albright, 1994, p. 60).

22. Do housekeepers periodically check the temperatures of refrigerators (38°-42° F) and freezers (0°-5° F) to ensure appropriate temperature settings?
    - Energy consumption can be up to 25 percent more if the temperature of refrigerators and/or freezers are 10° colder than necessary (The EarthWorks Group, 1989, p. 31).

23. Are TVs unplugged in rooms not in use?
    - TVs actually continue to draw energy even when turned off (The Green Group, 1992, p. 92).

24. Do housekeepers check to ensure windows are closed when the heat or A/C is running?

25. Do housekeepers turn of lights, radios, and TVs in unoccupied rooms?

26. Do the housekeepers regularly dust the light bulbs?
    - Dust and dirt on light bulbs can reduce the illumination by up to 50 percent and cause higher energy usage (The EarthWorks Group, 1989, p. 57).

Administrative areas

27. Are lights turned off when rooms are not in use?
    a. offices?
    b. storage areas?
    c. break rooms?

28. Can natural light be more fully utilized by placing desks and work areas next to windows?

29. Are all office machines turned off in the evenings and over weekends?
    a. copiers?
    b. computers?
    c. typewriters?
    - Turning off office equipment when it's not in use can
        - save up to 90 percent of the energy it currently consumes and
        - reduce demand on A/C systems since most equipment generates heat while running (The EarthWorks Group, 1991, pp. 46-47).

Maintenance practices

30. Are the heating system and A/C system filters changed regularly?
    - Dirty filters cause the compressor and fan to work harder, using more electricity (The EarthWorks Group, 1989, p. 30).

31. Are all ducts in the heating and A/C systems properly sealed and insulated?

32. Do all water heaters have insulating blankets or jackets?
    - Insulating blankets or jackets can save up to 8 percent of energy used, especially if the hot water heater is in an unheated area (The EarthWorks Group, 1989, p. 25).

33. Are all hot water pipes insulated?

34. Have water heaters been turned down to 130° F?
    - Many water heaters are kept at 140°--hotter than necessary. For every 10° F a water heater is turned down, energy savings of approximately 6 percent can be realized. Some experts recommend 120° F but a possible health risk, Legionnaire's Disease, can live in hot water heaters and 120° F may not be hot enough to kill it (The EarthWorks Group, 1989, p. 25).

35. Is there a comprehensive maintenance program in place that requires periodic maintenance of all equipment and systems to ensure proper and efficient functioning (i.e., ice machines, heating and A/C systems)?
    - Regular maintenance can increase heating equipment life by up to 200 percent (The EarthWorks Group, 1991, p. 78).
    - Regular maintenance of A/C equipment can reduce energy use by 20 percent (The EarthWorks Group, 1991, p. 80).

36. Are broken appliances, equipment, and furniture evaluated for financial feasibility of repair over replacement?

Appliance purchases

37. If new appliances must be purchased, are they the most energy-efficient model?

38. If electric appliances are currently used, is it possible gas appliances can be used for future replacements?
    - Gas appliances are about 50 percent more energy efficient than electric appliances (The Green Group, 1992, p. 69).

39. If new refrigerators/freezers are purchased, are they standard instead of self-defrosting models?
    - Self-defrosting models are more convenient, but they can use 40-60 percent more energy than standard models (Houston Lighting & Power [HL & P], 1994, p. N-6).

40. If new dishwashers are purchased, are they models with booster heaters?
    - Booster heaters heat the water to the necessary 140° F necessary while allowing the water heater to be kept at a lower temperature (recommended 130°F) (HL & P, 1994, p. N-7).

41. If new dishwashers are purchased, do they have short cycle selections and an "air dry" option?
    - Allows dishes to air dry rather than using energy for a heated dry cycle and can save up to 30 percent of the dishwasher's energy use (HL & P, 1994, p. N-7).

42. If new washers are purchased, are they front-loading rather than top-loading machines?
    - Front-loading machines use one-third less water and energy than top-loading machined (HL & P, 1994, p. N-7).

43. If new dryers are purchased, do they have a moisture sensor control?
    - This feature senses when load is dry and automatically turns the dryer off and eliminates energy wasted for an overdryed load and the inconvenience of an underdryed load (HL & P, 1994, p. N-7).

44. If new ovens are purchased, are they convection ovens?
    - Convection ovens have fans that circulate air during cooking and speed the cooking process and reduce energy used (HL & P, 1994, p. N-6).

45. If new gas stoves are purchased, do they have an electronic ignition system?
    - Electronic ignition systems use about 40 percent less gas than a pilot light (The EarthWorks Group, 1989, p. 30).

Laundry

46. Are all loads of bedding and towels washed full loads?

47. Are all loads of bedding and towels dried full loads?

48. Are employees trained not to overload dryers?

49. Is the automatic dry cycle used to prevent dryer from running longer than necessary?

50. Is the exhaust vent periodically checked and cleaned?

51. Do the dryers have hoods over the outside exhaust vents?
    - If there is not a tightly fitting hood over the outside vents, it is just like having a hole in the wall forcing heating and A/C systems to work harder (The Green Group, 1992, p. 63).

52. Are lint traps cleaned after every load of laundry?
    - Regular cleaning keeps the air circulating effectively, reducing energy use (The EarthWorks Group, 1989, p. 31).

53. Are the wash cycles used for laundry loads set for the appropriate temperature?
    - Up to 90 percent of the energy used for laundry is for heating the water. Warm water wash/cold water rinse works as well as hot water wash/warm water rinse unless load is heavily soiled. Additionally, the temperature of the rinse cycle does not affect cleaning (The EarthWorks Group, 1989, p. 31).

Grounds maintenance

54. Has the use of solar lights for pathway and driveway lights been investigated?
    - Solar powered designs charge automatically during the day to run efficient lights at night. Every kilowatt of power generated by solar power reduces the burning of oil, coal, or natural gas to produce that kilowatt (The EarthWorks Group, 1991, pp. 98-99).

55. If there is a landscaping plan, does it call for the use of indigenous plants that can survive on natural rainfall alone?

56. Are A/C units shaded?
    - "According to the American Forestry Association, one or two trees shading your outdoor air-conditioning units can increase their operating efficiency as much as 10 percent" (MacEachern, 1990, p. 28).

Vehicle maintenance

For every gallon of gas used, cars emit 20 pounds of carbon dioxide--the key ingredient in the greenhouse effect. Burning less gas reduces the carbon dioxide amount as well as the amount of nitrogen oxide (acid rain component) and hydrocarbons (smog ingredient) (The EarthWorks Group, 1989, p. 36).

57. Are routine maintenance procedures regularly scheduled and completed?
    a. fuel filters cleaned/replaced?
        - Clogged fuel filters use more gas (The EarthWorks Group, 1989, p. 37).
    b. tires properly inflated?
        - Properly inflated tires can increase gas mileage by up to 5 percent (The EarthWorks Group, 1991, p. 68).
    c. tune-ups performed?
        - Regular tune-ups can increase gas mileage by up to 10 percent, lengthen engine life, and reduce operating costs (The EarthWorks Group, 1991, p. 68).
    d. air filters cleaned/replaced?
        - A clogged air filter reduces the amount of air which will probably cause a gas "rich" mixture--more gas and less air--wasting gasoline (Albright, 1994, p. 61).
    e. oil changed?
        - Dirty oil causes more energy friction and decreases efficiency and gas mileage (Albright, 1994, p. 61).
    f. fan belt checked?
        - A fan belt that is too tight caused the engine to work harder and wastes gasoline (Albright, 1994, p. 61).

g. spark plugs checked?
   - Badly worn plugs can reduce gas mileage by up to two miles per gallon (Albright, 1994, p. 61).

58. Are vehicles outfitted with radial tires?
   - Radial tires can improve gas mileage by up to 10 percent (The EarthWorks Group, 1991, p. 68).

Solid Waste Minimization Initiatives

Reducing the amount of solid waste generated can reduce tipping fees and lengthen the life span of landfills. Recycling can generate money from the sale of collected materials while reducing the waste stream and possibly reducing tipping fees. It also reduces the amount of air and water pollution since the manufacture of recycled products typically requires less energy. Recycled items also save many virgin materials from destruction.

Guestrooms

1. Have refillable amenity dispensers for shampoo, conditioner, mouthwash and soap been installed to replace individual containers?

2. If not, is there a plan to phase in their installation?

3. If individual amenities are used, are the partially used containers and soaps donated to a local charitable organization?

4. If individual amenities are used, are they packaged in recyclable materials?

5. Have unnecessary amenities been removed from rooms?

6. Are the amenities provided biodegradable (vegetable-based) and non-animal tested?

7. Have individual creamer and sugar packages been replaced with bulk amounts in appropriate containers?

8. Are the tea bags oxygen- rather than chlorine-bleached and free of strings, tags, staples, and individual foil envelopes?
   - Bleaching produces toxic dioxins that pollute water and traces may remain in the paper (The EarthWorks Group, 1991, p. 14).
   - Strings, tags, etc are unnecessary and add to the waste stream.

9. Are unbleached coffee filters used?
   - See Guestrooms item 8

10. Are re-usable products rather than disposable items provided?
    a. ceramic coffee mugs instead of Styrofoam cups?
    b. glasses instead of Styrofoam cups?
        - Polystyrene foam NEVER decomposes and is made from a carcinogenic oil byproduct called benzene. Styrofoam is recyclable but so few recycling facilities exist, it remains in the waste stream (The EarthWorks Group, 1991, p. 12).
    c. 100 percent cloth napkins instead of paper napkins?
        - 100 percent cotton is non-toxic and natural while
        - Paper production requires trees, produces dioxin (a toxic byproduct of papermaking), and adds more to the waste stream (The Green Group, 1992, p. 19).
    d. metal tableware instead of plastic utensils?
    e. mesh coffee filter instead of paper filters?
        - Replacing disposable products with re-useable products reduces the amount of waste generated, lowers tipping fees, and extends landfill life spans.
        - Americans toss out enough disposable cups, stirrers, spoons and forks every year to circle the equator 300 times. As many as 5 billion cups alone could be eliminated if 10 million people used their own ceramic mugs in the office--a savings of about 166 feet of landfill space per person per year (The EarthWorks Group, 1991, pp. 12-13).

11. If disposable cups must be used, are they paper rather than Styrofoam?
    - Paper is recyclable and biodegradable.

12. Have recycling bins been placed in each guestroom?

13. When wooden hangers must be replaced, are they replaced with hangers made from soft rather than hard woods?
    - Soft woods grow back more quickly than hard woods ("The Hotel of the Future?" 1994, p. 204).

14. If stationery and envelopes are provided, are they recycled paper content?
    - "According to Paper Sales magazine, 80 percent of U.S. printers reported that recycled paper's performance was equal to or better than nonrecycled paper" (The EarthWorks Group, 1991, pp. 60-61).

15. Is toilet paper made from recycled paper?
    - In some cases, products made from recycled paper are better made and actually more product for the money. The best products do not have "cushions" which only create an illusion of more product (The Green Group, 1992, p. 38).

16. If paper towels are provided, are they made from recycled paper?
    - See Guestrooms item 15.

17. Is there too much "paper" information provided in rooms?
    a. can it be condensed?
    b. can a TV channel be utilized to provide the information?

Housekeeping practices

18. Are housekeepers using 100 percent cloth cleaning rags instead of paper towels?
    - See Guestrooms item 10c.

19. Are lined garbage cans emptied instead of replacing the garbage bag every day?

20. Are the garbage bags used recycled/recyclable?
    - Some are up to 80 percent recycled plastic and using this type of plastic bag reduces the amount of new plastic needed to make new plastic bags (The Green Group, 1992, p. 45).

Administrative areas

21. Is there a recycling program in place?
    a. aluminum cans?
        - Recycling one aluminum can saves
            - the equivalent of enough energy to run a TV for three hours or
            - enough energy to manufacture 19 more aluminum cans (AH & MA, 1994b, p. 2).
        - Recycled aluminum scrap saves 95 percent of the energy required to make new aluminum from ore (AH & MA, 1994b, p. 2).
        - Recycling aluminum reduces associated air pollution by 95 percent (AH & MA, 1994b, p. 2).
    b. cardboard?
        - Recycling corrugated cardboard saves approximately 25 percent of the energy used to produce it (The EarthWorks Group, 1991, p. 87).
    c. fine paper?
    d. computer paper?
    e. newspaper?
    f. telephone books?
        - Recycling one ton of paper saves an estimated
            - 17 trees,
            - 7,000 gallons of water,
            - 4,100 kilowatts of energy,
            - 3.3 cubic yards of landfill space,

- 3 barrels of oil, and
- 60 pounds of pollutants from the air (AH & MA, 1994b, pp. 2, 14).

- Manufacturing recycled paper used approximately 64 percent less energy, reduces air pollution by 74 percent, and uses 58 percent (7,000 gallons) less water than manufacturing paper from virgin pulp (AH & MA, 1994b, p. 2).

g. glass, clear?
h. glass, colored?
   - Glass never wears out; it can be recycled forever. Glass produced from recycled material instead of raw material reduces water pollution by 50 percent and air pollution by 20 percent (The EarthWorks Group, 1991, pp. 86-87).
   - Recycling one glass bottle can save enough energy to light a 100 watt bulb for four hours (AH & MA, 1994b, p. 2).

22. Are re-usable products instead of disposable products being used?
    a. ceramic coffee mugs instead of Styrofoam cups?
    b. glasses instead of Styrofoam cups?
    c. cloth napkins instead of paper napkins?
    d. metal tableware instead of plastic utensils?
    e. mesh coffee filter instead of paper filters?
       - See Guestrooms item 10.

23. If disposable cups must be used, are they paper rather than Styrofoam?
    - See Guestrooms item 11.

24. Are tea bags oxygen- rather than chlorine-bleached and free of strings, tags, staples and individual foil envelopes?
    - See Guestrooms item 8.

25. Are unbleached coffee filters used?
    - See Guestrooms item 8.

26. Does all paper used contain recycled content?
    - See Guestrooms item 14.

27. Is all paper used white instead of colored?
    - White paper is worth more than colored on the recycling market.
    - Most colored paper is bleached before it's dyed which puts toxic dioxins into water ways (The EarthWorks Group, 1991, p. 51).

28. Do all forms used contain recycled content?
    - See Guestrooms item 14.

29. Has the number of individual copies produced been reduced?
    a. a routing system used?
    b. e-mail used whenever possible?
    c. a centralized bulletin board system used?
        - Americans make nearly 400 billion copies a year or about 750,000 copies every minute of every day. If copy machine usage was reduced by five copies per business day per copier, savings could be as much as
            - 17.5 million reams of paper or 1.4 million trees and
            - 26 million cubic feet of paper in landfills (The EarthWorks Group, 1991, pp. 16-17).

30. Is less paper used whenever possible and appropriate?
    a. double-sided copies?
    b. single-spaced documents?
    c. document margins reduced?
    d. documents edited before printing?
    e. printing drafts on used paper?
    f. printing internal memos on used paper?
    g. using computer software for faxing (without printing)?
    h. fax post-its or half-page fax cover sheets used?
        - Using less paper can save money since less paper is purchased and reduces tipping fees since less paper ends up in the waste stream. If all employees reduced paper use by 5 percent, resultant savings could be
            - over 1 million tons of paper each year or 17 million trees and
            - air and water pollution caused by production of new paper (The EarthWorks Group, 1991, p. 23).

31. Can one erasable wall calendar replace the individual desk calendars?

32. Is there a worn bedding, towel and napkin re-use program in place?
    a. cut down to use as cleaning rags?
    b. donated to charitable shelters?

33. If new mattresses are purchased, have you sought command approval to donate the used mattresses to a charitable shelter?

34. Are any batteries used being replaced with rechargeable batteries?
    - Alkaline batteries contain mercury and cadmium both toxic substances. Although rechargeable batteries contain cadmium, they do not contain mercury. Since they last longer, less cadmium reaches the waste stream (The EarthWorks Group, 1989, p. 38).

35. Are manila envelopes re-used by placing gummed labels over the previous addresses?
36. Are computer printer cartridges refilled and re-used?
    - Refilling cartridges usually costs about 50 percent less than purchasing a new cartridge and saves the plastic cartridge from the landfill (The EarthWorks Group, 1991, p. 31).

37. Are re-inkable or multi-strike typewriter ribbons used?
    - Re-inking ribbons generally costs about 40 percent less than the price of a new one and saves the plastic cartridge from the landfill (The EarthWorks Group, 1991, p. 31).
    - Multi-strike ribbons last longer, reducing the number landfilled (The EarthWorks Group, 1991, p. 31).

38. Does the fax machine use plain paper instead of standard fax paper?
    - Standard fax paper is coated with chemicals and generally not recyclable (The EarthWorks Group, 1991, p. 31).
    - If one in 10 users switched to plain fax paper and recycled those faxes, 500,000 miles of paper could be saved (The EarthWorks Group, 1991, pp. 18-19).

39. Are refillable pens used?

40. If not, are pens made from recycled/recyclable plastic?

41. Are refillable pencils used?

42. If not, are the pencils used made from recycled cardboard or wood instead of virgin wood?
    - About 15 percent of all wood pencils are made from wood harvested in endangered rainforests (The EarthWorks Group, 1991, p. 34).

Supply purchasing

43. Are all cleaning supplies citrus-based, non-toxic biodegradable products?
    - Green cleaners are usually in a concentrated form which can save money in the long run (The EarthWorks Group, 1991, p. 25).
    - They also reduce the number of harmful chemicals flushed into the water supply (The EarthWorks Group, 1991, p. 25).

44. Are all cleaning supplies bought in bulk and refillable containers used?

45. Are only non-aerosol spray cleaning items purchased?
    - Ozone-depleting chlorofluorocarbons (CFCs) in aerosol cans were banned by the federal government in 1978. However, 10 percent of aerosols still use CFCs as propellants. Even those without CFCs are not benign. Many use propane and butane, hydrocarbons, that help create smog when they interact with sunlight (The EarthWorks Group, 1989, pp. 34-35).

46. Is the laundry detergent phosphate free?
    - Phosphates emptied into lakes and streams cause "algae bloom"--the algae grows out of control. When the algae dies as part of the natural cycle, the bacteria that cause its decay--a process requiring huge amounts of oxygen--uses up the oxygen needed by the other marine life to survive. Lakes and streams can die (The EarthWorks Group, 1989, p. 22).

47. If bleach is used, is it non-chlorine bleach?
    - "In waste water, chlorine can react with organic and other compounds to create toxins or carcinogens" (The EarthWorks Group, 1991, p. 24).

48. Is minimal packaging required on any supplies bought outside the supply system?

49. Are the sponges used cellulose rather than polyurethane or sea-sponges?
    - Polyurethane is derived from petroleum, a diminishing natural resource and is not biodegradable. Sea-sponges are a natural and non-toxic, but they too are a diminishing natural resource. Cellulose sponges are plentiful and biodegradable. They are also usually thicker and more absorbent than polyurethane sponges and cheaper (The Green Group, 1992, p. 44).

50. If a new copy machine is purchased, does it have "duplex" and power-saver features?
    - The duplex feature allows two-sided copies--saves paper and manual reloading on older machines to obtain two-sided copies and
    - A power-saver feature can cut energy use by over 90 percent when the copier is not being used (The EarthWorks Group, 1991, pp. 16-17).

Grounds maintenance

51. If you are responsible for lawn maintenance, is there a base composting program you can use to dispose of clippings?

52. If there is no base program, have you investigated an alternate composting program to eliminate the clippings from your waste stream?

Water Conservation Initiatives

Water conservation techniques primarily save money due to less water used. However, some initiatives also save energy since less water used means less water required to be heated.

Guestrooms

1. Have toilet dams been placed in all regular toilets?
   - Older toilets use between 4-7 gallons of water for every flush. Water dams can reduce each flush by 1 or more gallons (The EarthWorks Group, 1991, p. 52).

2. Have the toilet tank valves been checked to ensure they are properly seated to eliminate leaking?
   - One leaky toilet can waste more than 50 gallons of water a day or 18,000 gallons a year (The EarthWorks Group, 1991, p. 52).

3. Is there a plan to systematically replace regular toilets with low-flow toilets?
   - New low-flow toilets use as little as 1.6 gallons of water per flush which can save up to 5.4 gallons per flush over regular toilets (MacEachern, 1990, p. 53).

4. Have low-flow showerheads been installed in all rooms?
   - Low-flow showerheads can reduce by approximately 50 percent the 5-7 gallons of water standard showerheads use per minute (The EarthWorks Group, 1989, p. 50).

5. Have faucet aerators been installed in all faucets?
   a. kitchens?
   b. bathrooms?
      - The average faucet uses 3-5 gallons of water per minute. Faucet aerators mix forced air with the water, reducing water flow by 25-50 percent, with little difference in feel (The EarthWorks Group, 1991, p. 42).

6. Has the optional towel re-use program authorized by AFMAN 34-603, Air Force Lodging Program Management been implemented?
   - Reduced costs can result from
     - less water used,
     - less detergent used,
     - less wear and tear on linens, and perhaps
     - less employee labor (Auer, 1994, p. 66).

Housekeeping practices

7. Do housekeepers immediately report any leaks to maintenance?
   - A leak that fills a coffee cup in 10 minutes will waste an estimated 3,000 gallons of water per year (The EarthWorks Group, 1991, p. 42).

8. Do housekeepers conserve water during cleaning operations?
   a. cleaning sinks?
   b. cleaning tubs?
   c. washing dishes?
      - The average faucet uses 3-5 gallons of water per minute--hundreds of gallons of water are running needlessly down the drain (The EarthWorks Group, 1991, p. 42).

Laundry

9. Are all loads of bedding and towels washed full loads?

10. If there is not a full load, are water levels set to the appropriate amount?

11. Has a system to re-use rinse water been investigated?

12. Has a system to collect and use "gray water" been investigated?

Maintenance

13. Is there a system in place to ensure prompt response to fixing any reported leaks?
    - See Housekeeping practices item 1.

Appliance purchasing

14. When new washers are purchased, are they front loading models?
    - Front-loading machines use one-third less water and energy than top-loading machines (HL & P, 1994, p. N-7).

Grounds maintenance

15. Are the grounds watered in the evening to reduce water evaporation?
    - Up to 60 percent of water is lost to evaporation if grounds are watered between 9 am and 5 pm during the summer months (The EarthWorks Group, 1991, p. 102).

16. Are soaker hoses used to reduce evaporation resulting from sprinkler use?
    - Soaker hoses leak moisture to the soil at slow rates, enabling the water to be absorbed rather than running off or evaporating (MacEachern, 1990, p. 83).

17. Are all hose connections and faucets checked to eliminate leaks?
    - "A slow drip all day long can waste from 15 to 40 gallons a day" (MacEachern, 1990, p. 84).

18. Is mulch used around trees and flower beds?
    - Mulch around plants and trees reduces the amount of watering required (MacEachern, 1990. p. 83).

19. Are sidewalks, parking lots, etc. swept with a broom instead of hosed down?
    - A running hose can use about 10 gallons of water per minute--thousands of gallons can be used unnecessarily (The EarthWorks Group, 1991, p. 102).

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Experience

Apr 1992 to Jul 1993 — USAF, King Salmon Airport, Alaska
Chief, MWR & Services
Managed all MWR & Services activities for 300 permanent party and all transient personnel. Activities included 100-bed lodging operation, two dining facilities serving over 12,000 meals monthly, all sports programs, consolidated club, bowling center, boat dock, theater, and library. Controlled contracts worth over $460K, an appropriated funds (APF) budget over $100K, a nonappropriated funds (NAF) budget of $230K, APF assets worth over $2 million and NAF assets worth $350K. Supervised 24 military personnel and 25 NAF employees. Named Pacific Air Force MWR & Services Company Grade Officer of the Year for 1992.

Oct 1989 to Mar 1992 — USAF, K. I. Sawyer AFB, Michigan
Chief, Force Management
Governed on-the-job training and Prime Readiness in Base Services wartime skills training for 50 squadron personnel. Supervised the base Honor Guard program, its 42 personnel, and the Mortuary Affairs program. Administered annual squadron APF budget of $2.1 million and $1.4 million in contracts. Directed all squadron mobility operations, including Desert Storm deployment, and developed plans for tasked contingency operations. Supervised 7 military personnel. Named Strategic Air Command Services Outstanding Company Grade Officer of the Year for 1991.

Aug 1984 to Jun 1988 — Elko County School District, Wells, Nevada
Health/Physical Education Teacher
Taught 400 students, grades 1-12, team sports and lifetime skills activities and grade 10 health. Coached JV and varsity volleyball, JV girls' basketball, and JV and varsity cheerleaders and songleaders.

Education

Aug 1993 to Aug 1995 — University of Houston, Houston, Texas
Masters of Hospitality Management
GPA: 4.0 Magna cum laude
Eta Sigma Delta International Hospitality Management Honor Society
Phi Kappa Phi Academic Honor Society

Aug 1980 to Apr 1984 — Adrian College, Adrian, Michigan
Bachelor of Arts/Teaching Certificate
GPA: 3.81 Summa cum laude
Kappa Delta Pi Education Honor Society
Alpha Chi Academic Honor Society